

**IN THE UNITED STATES DISTRICT COURT  
FOR THE EASTERN DISTRICT OF TEXAS  
MARSHALL DIVISION**

WI-LAN, INC.,

*Plaintiff,*

V.

ACER, INC., *et al.*,

### *Defendants.*

CASE NO. 2:07-CV-473-TJW

**CONSOLIDATED WITH**

WI-LAN, INC.,

*Plaintiff,*

V.

WESTELL TECHNOLOGIES, INC., *et al.*,

### *Defendants.*

CASE NO. 2:07-CV-474-TJW

WI-LAN, INC.,

*Plaintiff,*

V.

CASE NO. 2:08-CV-247-TJW

RESEARCH IN MOTION CORP., *et al.*,

### *Defendants.*

## **MEMORANDUM OPINION AND ORDER**

## I. INTRODUCTION

Plaintiff Wi-LAN, Inc. (“Wi-LAN”) filed suit against numerous defendants (collectively “Defendants”) alleging infringement of U.S. Patent Nos. 5,282,222 (“the ‘222 patent”) and RE37,802 (“the ‘802 patent”). The ‘222 patent is entitled “Method and Apparatus for Multiple

Access Between Transceivers in Wireless Communications using OFDM Spread Spectrum.”

The ‘802 patent, entitled “Multicode Direct Sequence Spread Spectrum,” is a continuation-in-part of the application leading to the ‘222 patent, with the same named inventors. This order addresses the parties’ various claim construction disputes. The order will first briefly address the technology at issue in the case and then turn to the merits of the claim construction issues.

## II. BACKGROUND OF THE TECHNOLOGY

The patents-in-suit are directed to voice and data transmission in wireless communications. The ‘222 patent is directed to wideband Orthogonal Frequency Domain Modulation communication systems, while the ‘802 patent is directed to direct sequence spread spectrum communication systems.

The **abstract of the ‘222 patent** states:

A method for allowing a number of wireless transceivers to exchange information (data, voice or video) with each other. A first frame of information is multiplexed over a number of wideband frequency bands at a first transceiver, and the information transmitted to a second transceiver. The information is received and processed at the second transceiver. The information is differentially encoded using phase shift keying. In addition, after a pre-selected time interval, the first transceiver may transmit again. During the preselected time interval, the second transceiver may exchange information with another transceiver in a time duplex fashion. The processing of the signal at the second transceiver may include estimating the phase differential of the transmitted signal and pre-distorting the transmitted signal. A transceiver includes an encoder for encoding information, a wideband frequency division multiplexer for multiplexing the information onto wideband frequency voice channels, and a local oscillator for upconverting the multiplexed information. The apparatus may include a processor for applying a Fourier transform to the multiplexed information to bring the information into the time domain for transmission.

**Claim 1 of the ‘222 patent** is reproduced below:

A transceiver including a transmitter for transmitting electromagnetic signals and a receiver for receiving electromagnetic signals having amplitude and phase differential characteristics, the transmitter comprising:

an encoder for encoding information;

a wideband frequency division multiplexer for multiplexing the information onto wideband frequency channels;

a low pass filter;

a local oscillator for upconverting the multiplexed information for transmission;

a processor for applying a Fourier transform to the multiplexed information to bring the information into the time domain for transmission;

further including, in the receiver of the transceiver:

- a bandpass filter for filtering the received electromagnetic signals;
- a local oscillator for downconverting the received electromagnetic signals to produce output;
- a sampler for sampling the output of the local oscillator to produce sampled signals to the channel estimator;
- a channel estimator for estimating one or both of the amplitude and the phase differential of the received signals to produce as output one or both of an estimated amplitude and an estimated phase differential respectively; and
- a decoder for producing signals from the sampled signals and the output from the channel estimator.

The **abstract of the ‘802 patent** states:

In this patent, we present MultiCode Direct Sequence Spread Spectrum (MC-DSSS) which is a modulation scheme that assigns up to N DSSS codes to an individual user where N is the number of chips per DSSS code. When viewed as DSSS, MC-DSSS requires up to N correlators (or equivalently up to N Matched Filters) at the receiver with a complexity of the order of  $N^2$  operations. In addition, a non ideal communication channel can cause InterCode Interference (ICI), i.e., interference between the N DSSS codes. In this patent, we introduce new DSSS codes, which we refer to as the "MC" codes. Such codes allow the information in a MC-DSSS signal to be decoded in a sequence of low complexity parallel operations which reduce the ICI. In addition to low complexity decoding and reduced ICI. MC-DSSS using the MC codes has the following advantages: (1) it does not require the stringent synchronization DSSS requires, (2) it does not require the stringent carrier recovery DSSS requires and (3) it is spectrally efficient.

**Claim 1 of the ‘802 patent** is reproduced below:

A transceiver for transmitting a first stream of data symbols, the transceiver comprising:

a converter for converting the first stream of data symbols into plural sets of N data symbols each;

first computing means for operating on the plural sets of N data symbols to produce modulated data symbols corresponding to an invertible randomized spreading of the first stream of data symbols; and

means to combine the modulated data symbols for transmission.

### **III. GENERAL PRINCIPLES GOVERNING CLAIM CONSTRUCTION**

“A claim in a patent provides the metes and bounds of the right which the patent confers on the patentee to exclude others from making, using or selling the protected invention.” *Burke, Inc. v. Bruno Indep. Living Aids, Inc.*, 183 F.3d 1334, 1340 (Fed. Cir. 1999). Claim construction is an issue of law for the court to decide. *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 970-71 (Fed. Cir. 1995) (en banc), *aff’d*, 517 U.S. 370 (1996).

To ascertain the meaning of claims, the court looks to three primary sources: the claims, the specification, and the prosecution history. *Markman*, 52 F.3d at 979. The specification must contain a written description of the invention that enables one of ordinary skill in the art to make and use the invention. *Id.* A patent’s claims must be read in view of the specification, of which they are a part. *Id.* For claim construction purposes, the description may act as a sort of dictionary, which explains the invention and may define terms used in the claims. *Id.* “One purpose for examining the specification is to determine if the patentee has limited the scope of the claims.” *Watts v. XL Sys., Inc.*, 232 F.3d 877, 882 (Fed. Cir. 2000).

Nonetheless, it is the function of the claims, not the specification, to set forth the limits of the patentee’s claims. Otherwise, there would be no need for claims. *SRI Int’l v. Matsushita Elec. Corp.*, 775 F.2d 1107, 1121 (Fed. Cir. 1985) (en banc). The patentee is free to be his own lexicographer, but any special definition given to a word must be clearly set forth in the

specification. *Intellicall, Inc. v. Phonometrics, Inc.*, 952 F.2d 1384, 1388 (Fed. Cir. 1992). Although the specification may indicate that certain embodiments are preferred, particular embodiments appearing in the specification will not be read into the claims when the claim language is broader than the embodiments. *Electro Med. Sys., S.A. v. Cooper Life Sciences, Inc.*, 34 F.3d 1048, 1054 (Fed. Cir. 1994).

This court's claim construction decision must be informed by the Federal Circuit's decision in *Phillips v. AWH Corporation*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc). In *Phillips*, the court set forth several guideposts that courts should follow when construing claims. In particular, the court reiterated that "the *claims* of a patent define the invention to which the patentee is entitled the right to exclude." 415 F.3d at 1312 (emphasis added) (*quoting Innova/Pure Water, Inc. v. Safari Water Filtration Systems, Inc.*, 381 F.3d 1111, 1115 (Fed. Cir. 2004)). To that end, the words used in a claim are generally given their ordinary and customary meaning. *Id.* The ordinary and customary meaning of a claim term "is the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention, i.e., as of the effective filing date of the patent application." *Id.* at 1313. This principle of patent law flows naturally from the recognition that inventors are usually persons who are skilled in the field of the invention and that patents are addressed to and intended to be read by others skilled in the particular art. *Id.*

The primacy of claim terms notwithstanding, *Phillips* made clear that "the person of ordinary skill in the art is deemed to read the claim term not only in the context of the particular claim in which the disputed term appears, but in the context of the entire patent, including the specification." *Id.* Although the claims themselves may provide guidance as to the meaning of

particular terms, those terms are part of “a fully integrated written instrument.” *Id.* at 1315, quoting *Markman*, 52 F.3d at 978. Thus, the *Phillips* court emphasized the specification as being the primary basis for construing the claims. *Id.* at 1314-17. As the Supreme Court stated long ago, “in case of doubt or ambiguity it is proper in all cases to refer back to the descriptive portions of the specification to aid in solving the doubt or in ascertaining the true intent and meaning of the language employed in the claims.” *Bates v. Coe*, 98 U.S. 31, 38 (1878). In addressing the role of the specification, the *Phillips* court quoted with approval its earlier observations from *Renishaw PLC v. Marposs Societa’ per Azioni*, 158 F.3d 1243, 1250 (Fed. Cir. 1998):

Ultimately, the interpretation to be given a term can only be determined and confirmed with a full understanding of what the inventors actually invented and intended to envelop with the claim. The construction that stays true to the claim language and most naturally aligns with the patent’s description of the invention will be, in the end, the correct construction.

*Phillips*, 415 F.3d at 1316. Consequently, *Phillips* emphasized the important role the specification plays in the claim construction process.

The prosecution history also continues to play an important role in claim interpretation. Like the specification, the prosecution history helps to demonstrate how the inventor and the PTO understood the patent. *Id.* at 1317. Because the file history, however, “represents an ongoing negotiation between the PTO and the applicant,” it may lack the clarity of the specification and thus be less useful in claim construction proceedings. *Id.* Nevertheless, the prosecution history is intrinsic evidence that is relevant to the determination of how the inventor understood the invention and whether the inventor limited the invention during prosecution by narrowing the scope of the claims. *Id.*

*Phillips* rejected any claim construction approach that sacrificed the intrinsic record in favor of extrinsic evidence, such as dictionary definitions or expert testimony. The *en banc* court condemned the suggestion made by *Texas Digital Systems, Inc. v. Telegenix, Inc.*, 308 F.3d 1193 (Fed. Cir. 2002), that a court should discern the ordinary meaning of the claim terms (through dictionaries or otherwise) before resorting to the specification for certain limited purposes. *Phillips*, 415 F.3d at 1319-24. The approach suggested by *Texas Digital*—the assignment of a limited role to the specification—was rejected as inconsistent with decisions holding the specification to be the best guide to the meaning of a disputed term. *Id.* at 1320-21. According to *Phillips*, reliance on dictionary definitions at the expense of the specification had the effect of “focus[ing] the inquiry on the abstract meaning of words rather than on the meaning of claim terms within the context of the patent.” *Id.* at 1321. *Phillips* emphasized that the patent system is based on the proposition that the claims cover only the invented subject matter. *Id.* What is described in the claims flows from the statutory requirement imposed on the patentee to describe and particularly claim what he or she has invented. *Id.* The definitions found in dictionaries, however, often flow from the editors’ objective of assembling all of the possible definitions for a word. *Id.* at 1321-22.

*Phillips* does not preclude all uses of dictionaries in claim construction proceedings. Instead, the court assigned dictionaries a role subordinate to the intrinsic record. In doing so, the court emphasized that claim construction issues are not resolved by any magic formula. The court did not impose any particular sequence of steps for a court to follow when it considers disputed claim language. *Id.* at 1323-25. Rather, *Phillips* held that a court must attach the appropriate weight to the intrinsic sources offered in support of a proposed claim construction,

bearing in mind the general rule that the claims measure the scope of the patent grant.

The patents-in-suit include claim limitations that are argued to fall within the scope of 35 U.S.C. § 112, ¶ 6. “An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure. . . in support thereof, and such claim shall be construed to cover the corresponding structure . . . described in the specification and equivalents thereof.” 35 U.S.C. § 112, ¶ 6. When a claim uses the term “means” to describe a limitation, a presumption inheres that the inventor used the term to invoke § 112, ¶ 6. *Biomedino, LLC v. Waters Technologies Corp.*, 490 F.3d 946, 950 (Fed. Cir. 2007). “This presumption can be rebutted when the claim, in addition to the functional language, recites structure sufficient to perform the claimed function in its entirety.” *Id.*, citing *Altiris, Inc. v. Symantec Corp.*, 318 F.3d 1363, 1375 (Fed. Cir. 2003). By contrast, when a claim term does not use “means,” the term is presumptively not subject to § 112, ¶ 6. *CCS Fitness, Inc. v. Brunswick Corp.*, 288 F.3d 1359, 1369 (Fed. Cir. 2002); *MIT v. Abacus Software*, 462 F.3d 1344, 1353 (Fed. Cir. 2006). A limitation lacking the term “means” may overcome the presumption if it is shown that “the claim term fails to recite sufficiently definite structure or else recites function without reciting sufficient structure for performing that function.” *MIT*, 462 F.3d at 1353, quoting *CCS Fitness*, 288 F.3d. at 1369. “What is important is whether the term is one that is understood to describe structure, as opposed to a term that is simply a nonce word or a verbal construct that is not recognized as the name of structure and is simply a substitute for the term ‘means for.’” *Lighting World, Inc. v. Birchwood Lighting, Inc.*, 382 F.3d 1354, 1360 (Fed. Cir. 2004).

Once the court has concluded the claim limitation is a means-plus-function limitation, the first step in construing a means-plus-function limitation is to identify the recited function. *See Micro Chem., Inc. v. Great Plains Chem. Co.*, 194 F.3d 1250, 1258 (Fed. Cir. 1999). The second step in the analysis is to identify in the specification the structure corresponding to the recited function. *Id.* The “structure disclosed in the specification is ‘corresponding’ structure only if the specification or prosecution history clearly links or associates that structure to the function recited in the claim.” *Medical Instrumentation and Diagnostics Corp. v. Elekta AB*, 344 F.3d 1205, 1210 (Fed. Cir. 2003), *citing B. Braun v. Abbott Labs*, 124 F.3d 1419, 1424 (Fed. Cir. 1997). The patentee must clearly link or associate structure with the claimed function as part of the quid pro quo for allowing the patentee to express the claim in terms of function pursuant to § 112, ¶ 6. *See id.* at 1211; *see also Budde v. Harley-Davidson, Inc.*, 250 F.3d 1369, 1377 (Fed. Cir. 2001). The “price that must be paid” for use of means-plus-function claim language is the limitation of the claim to the means specified in the written description and equivalents thereof. *See O.I. Corp. v. Tekmar Co.*, 115 F.3d 1576, 1583 (Fed. Cir. 1997). “If the specification does not contain an adequate disclosure of the structure that corresponds to the claimed function, the patentee will have ‘failed to particularly point out and distinctly claim the invention as required by the second paragraph of section 112,’ which renders the claim invalid for indefiniteness.” *Blackboard, Inc. v. Desire2Learn, Inc.*, 574 F.3d 1371, 1382 (Fed. Cir. 2009), *quoting In re Donaldson Co.*, 16 F.3d 1189, 1195 (Fed. Cir. 1994) (en banc). It is important to determine whether one of skill in the art would understand the specification itself to disclose the structure, not simply whether that person would be capable of implementing the structure. *See Atmel Corp. v. Info. Storage Devices, Inc.*, 198 F.3d 1374, 1382 (Fed. Cir. 1999); *Biomedino*, 490 F.3d

at 953. Fundamentally, it is improper to look to the knowledge of one skilled in the art separate and apart from the disclosure of the patent. *See Medical Instrumentation*, 344 F.3d at 1211-12. “[A] challenge to a claim containing a means-plus-function limitation as lacking structural support requires a finding, by clear and convincing evidence, that the specification lacks disclosure of structure sufficient to be understood by one skilled in the art as being adequate to perform the recited function.” *Budde*, 250 F.3d at 1376-77.

At issue in this case is whether certain claims of the patents-in-suit are indefinite. A claim is invalid for indefiniteness if it fails to particularly point out and distinctly claim the subject matter that the applicant regards as the invention. 35 U.S.C. § 112, ¶ 2. To prevail on an indefiniteness argument, the party seeking to invalidate a claim must prove “by clear and convincing evidence that a skilled artisan could not discern the boundaries of the claim based on the claim language, the specification, and the prosecution history, as well as her knowledge of the relevant art area.” *Halliburton Energy Services, Inc. v. M-I LLC*, 514 F.3d 1244, 1249-50 (Fed. Cir. 2008). The primary purpose of the definiteness requirement is to ensure public notice of the scope of the patentee's legal right to exclude, such that interested members of the public can determine whether or not they infringe. *Datamize, LLC v. Plumtree Software, Inc.*, 417 F.3d 1342, 1347 (Fed. Cir. 2005); *Halliburton*, 514 F.3d at 1249; *Honeywell Int'l Inc. v. Int'l Trade Comm'n*, 341 F.3d 1332, 1338 (Fed. Cir. 2003). Courts apply the general principles of claim construction in their efforts to construe allegedly indefinite claim terms. *Datamize*, 417 F.3d at 1348; *Young v. Lumenis, Inc.*, 492 F.3d 1336, 1346 (Fed. Cir. 2007). A claim is indefinite only when a person of ordinary skill in the art is unable to understand the bounds of the claim when read in light of the specification. *Miles Labs., Inc. v. Shandon, Inc.*, 997 F.2d 870, 875 (Fed. Cir.

1993); *Star Scientific, Inc. v. R.J. Reynolds Tobacco Co.*, 537 F.3d 1357, 1371 (Fed. Cir. 2008).

A determination of claim indefiniteness is a conclusion of law. *Exxon Research & Eng'g Co. v. United States*, 265 F.3d 1371, 1375-76 (Fed. Cir. 2001); *Datamize*, 417 F.3d at 1347.

A claim is indefinite only if the claim is “insolubly ambiguous” or “not amenable to construction.” *Exxon*, 265 F.3d at 1375; *Young*, 492 F.3d at 1346; *Halliburton*, 514 F.3d at 1249; *Honeywell*, 341 F.3d at 1338-39. A court may find a claim indefinite “only if reasonable efforts at claim construction prove futile.” *Datamize*, 417 F.3d at 1347. A claim term is not indefinite solely because the term presents a difficult claim construction issue. *Id.*; *Exxon*, 265 F.3d at 1375; *Honeywell*, 341 F.3d at 1338. “If the meaning of the claim is discernable, even though the task may be formidable and the conclusion may be one over which reasonable persons will disagree, ... the claim [is] sufficiently clear to avoid invalidity on indefiniteness grounds.” *Exxon*, 265 F.3d at 1375; *Halliburton*, 514 F.3d at 1249.

#### **IV. AGREED CONSTRUCTIONS**

Based upon the joint submission of claim construction charts, the following terms of the ‘222 and ‘802 patents have been agreed to by the parties, and therefore adopted by the Court:

<b>Claim term</b>	<b>Agreed Construction</b>
$\chi$	a real value that when multiplied by the duration of one time domain sample provides the maximum expected clock error

## V. TERMS IN DISPUTE OF THE ‘222 PATENT

### 1. “transceiver”

Wi-LAN’s Proposed Construction	Defendants’ Proposed Construction
“a two-way radio unit”	“transceiver that omits clock recovery, carrier recovery, automatic gain control, passband limiter, power amplifier, an equalizer, and an interleaver-deinterleaver”  Alternatively, “transmitter and receiver that omits clock recovery, carrier recovery, automatic gain control, passband limiter, power amplifier, an equalizer, and an interleaver-deinterleaver”

The Court finds that claim 1 of the ‘222 patent requires a “transceiver,” whereas claim 7 of the ‘222 patent requires a “wireless transceiver.” Claim 1 requires that the transceiver has both a transmitter for transmitting and a receiver for receiving. In the Background and Summary of the Invention section, the specification expressly states that a transceiver is “capable of transmitting and receiving information (voice, data or video) in the form of electromagnetic signals,” “may be fixed or portable,” and in personal communications networks may be a “portable radio unit.” ‘222 patent, 1:33-36, 1:43-45. The Court finds that the ordinary definition of the term “transceiver” is a device that both transmits and receives data. While the Court finds that a two-way radio unit may be a transceiver, the Court rejects Wi-LAN’s argument that the transceiver must necessarily be limited to a radio unit.

The Court finds that the primary dispute between the parties is whether certain advantages or benefits of the disclosed system are merely optional or are mandatory omissions from the definition of a “transceiver.” Defendants argue that the specification makes repeated disclaimers of prior art transceiver components throughout the specification and distinguishes the “present invention” from the prior art on the basis that it omits a number of components found in

prior art transceivers. Defendants argue that the Federal Circuit is clear that when the specification makes clear that the alleged invention does not include particular items those items are outside the scope of the claims. The Court disagrees with Defendants' arguments. While there is language in the specification indicating that the present invention distinguishes prior art as requiring certain attributes of the transceiver that are not required in the applicants' invention, the Court finds that the language is not a clear limitation that the term transceiver is to be so limited. Rather, the Court finds that certain omissions of the present invention, compared to the prior art, are merely advantageous and not necessary. The Court finds that the "not required" language in the specification does not necessarily mean "omitted" or "excluded." For example, in the Detailed Description of the Preferred Embodiments section, the language only states that some of the prior art components of a transceiver are "not required" or "not used" and briefly describes how the "omissions" of these components can be done without impairing the quality and capacity of the system. '222 patent, 4:55-63; 12:45-50. The Court finds that there is no express requirement that the present invention necessarily excludes the optional components nor is there any express disavowal that the term "transceiver" excludes the optional components. The Court finds that not a single claim in the '222 patent includes the requirement that these optional components must be omitted from the transceiver. Further, because claim 7 provides certain limitations of the width of the frequency band so that "neither carrier nor clock recovery is required at the second transceiver," such a limitation would be meaningless if the transceiver had already expressly omitted clock recovery and carrier recovery. The Court finds that, in the entirety of the specification and the claims and considering the ordinary meaning of the term, the omission of the disputed elements is merely optional, i.e. "not required," and is not a necessary

exclusion. Thus, the Court construes the term “transceiver” as “*a device that transmits and receives data.*”

## 2. “amplitude and phase differential characteristics”

Claim Language	Wi-LAN’s Proposed Construction	Defendants’ Proposed Construction
“ <i>amplitude and phase differential characteristics</i> ”	“amplitude and phase distortions” Alternative: “amplitude and phase differences in the received signal caused by the wireless channel”	“amplitude and phase characteristics resulting from differential modulation”
“ <i>amplitude and phase differential</i> ”	“amplitude and phase distortions” Same alternative	“difference in amplitude and phase”
“ <i>differential characteristics</i> ”	“amplitude and phase distortions” Same alternative	“characteristics resulting from differential modulation”
“ <i>estimated amplitude and an estimated phase differential</i> ”	“amplitude and phase distortions” Same alternative	“estimated difference in amplitude or phase between received data symbols”

The Court rejects Wi-LAN’s proposal that “differential” in the claims is equal to “distortions.” The claims of the ‘222 patent never mention “distortion.” While much of the ‘222 patent references “phase differential,” the patent also references “distortion” in various instances. However, the patent never refers to a “differential” as a “distortion” and never equates those terms. The Court finds that Wi-LAN is seeking to improperly remove the word “differential” from the claims and substitute an entirely different word. The Court finds that “differential” and “distortion” have different meanings. Claim 1 of the ‘222 patent requires “amplitude and phase differential characteristics,” “the amplitude,” “the phase differential,” “an estimated amplitude,” and “an estimated phase differential.” Further, dependent claim 4 recites “the estimated amplitude” or “the estimated phase differential,” dependent claim 6 recites “estimated amplitude and phase differential,” dependent claim 11 recites “an estimated phase differential,” and

dependent claim 12 recites “the phase differential.” The claims recite only two terms: “amplitude” and “phase differential.” In other words, the words “differential” and “phase” must be construed together as “phase differential.” Thus, the Court rejects the parties’ arguments that the term “differential” applies to both “phase” and “amplitude.” Accordingly, based on the claim language, the Court rejects Wi-LAN’s argument that the “differential” term implies that it is distortions to both the amplitude and phase of the signal or differences in both the amplitude and phase caused by the channel. Similarly, based on the claim language, the Court rejects Defendants’ argument that the “differential” term implies that it is the result of differential modulation to *both* the amplitude and phase of the signal, as compared to just the phase of the signal. If the Court were to require differential modulation to both the amplitude and the phase of the transmitted signal, it would impermissibly eliminate the preferred embodiment of multilevel differential phase shift keying (MDPSK), a technique that changes the phase of a signal and not the amplitude of the signal.

This interpretation is consistent with the specification. The Abstract and the Background and Summary of the Invention sections provide that “[t]he processing of the signal at the second transceiver may include estimating the phase differential of the transmitted signal...” ‘222 patent, Abstract, 3:4-6. The Detailed Description also has numerous references to “phase differential.” *See id.* at 9:43-61; 10:58-11:2; 11:18-12:13; 18:1-9. While the focus of the patent is on differential phase modulation, hence the repeated use of the term “phase differential,” there are at least two references in the specification to the potential use of amplitude modulation by the technique of quadrature amplitude modulation (“QAM”). *See id.* at 5:34-35; 7:24-27. However, the ‘222 patent suggests that QAM should not be used because “amplitude modulation makes it

difficult to equalize the distorting effects of the channel on the signal.” *Id.* at 7:24-27. Based upon the claim language chosen by the patentee, the Court finds that the claimed language does not necessarily require the alternative disclosed technique of amplitude modulation. In the claims, the term “differential” applies specifically only to the phase of the signal, and does not reference or relate to the term amplitude in the claim language. While the transmitted and received signals will necessarily have an amplitude (and phase), and there will likely be distortions to the amplitude (and phase) caused by the channel, the Court finds that the express claim language indicates that the term differential, and hence differential modulation, only applies to the phase of the signal and not the amplitude.

In the patent, the claimed channel estimator estimates the phase differential of the transmitted signals by sampling the amplitude envelope of the signals. *See* ‘222 patent, 11:1-28. The specification expressly describes a “phase estimator” in the channel estimator. *See* ‘222 patent, 10:58-60; 18:48-50. The Court agrees with the Defendants that estimates of the “amplitude” and the “phase differential” are used to correct for distortion over the channel, and accordingly, the “phase differential” of the received signal is supplied to the “pre-distorter” to correct for “phase distortion over the channel.” *See* ‘222 patent, 9:43-61. The channel estimator uses the differences in amplitude of the signals by sampling the amplitude envelope to estimate the phase differential of the transmitted signal, *see* ‘222 patent, 11:3-12:22, and the estimated “amplitude” and the “phase differential” are then used to correct for distortion over the channel. *See* claim 4; *see also* ‘222 patent, 9:43-61. This interpretation is further reinforced by the patentee’s co-pending application, now U.S. Patent No. 5,369,670 (“the ‘670 patent”), that was referenced in the prosecution history of the ‘222 patent as being “relevant to the extent that it

includes a description of the phase estimation technique disclosed in the present application.” See Applicants’ April 19, 1993 Information Disclosure Statement. The ‘670 patent expressly states that “[a] differential of a sequence of symbols or data points is a measure of the time rate of change of a sequence of symbols or data points. … it may be estimated as a difference between symbols or data points.” ‘670 patent, 4:3-11. “The information in the carrier signal may be carried in the phase differential of a number of consecutive time instants, or as differential phase shifts of a number of frequency components of the transmitted signal.” ‘670 patent, 4:27-31. Further, the ‘670 patent states that “the estimation of the phase differential may be made from sampling the amplitude of the transmitted signal” and that the estimated phase differential can be used to “produce a corrected signal.” ‘670 patent, 2:46-48, 63-68. Thus, the specification of the ‘670 patent is consistent with this Court’s interpretation of the claims in the ‘222 patent.

In an alternative construction, Wi-LAN proposes that the amplitude and phase differences in the received signal are “caused by the wireless channel.” Defendants take a contrary position and contend that the differences result solely from “differential modulation.” Neither position is entirely correct. The wireless channel can cause differences or distortions to the amplitude or phase of the transmitted signal by numerous affects, such as Doppler shifts, multipath interference, fading, and clock error. Thus, while there will likely be distortions to the amplitude and phase of the transmitted signal caused by the channel, the claim language, as interpreted in light of the specification, indicates that the terms “amplitude” and “phase differential” as claimed are not the distortions or differences to the signal as a result of the channel. Further, the Court finds that the claimed phrase, because the term “differential” applies to “phase” and not

“amplitude,” cannot be referencing the differences or distortions of the channel on *both* the amplitude and phase of the received signal. Rather, the term “phase differential,” based upon the specification, the claims, and one of ordinary skill in the art, implies that the transmitted information is carried in the phase differential of the transmitted signals, i.e., the phase differential is the result of differential modulation and not the effects of the wireless channel. As described further in the analysis section for the term “channel estimator,” the channel estimator computes the effects of the distortions from the differences in the amplitude and phase differential, but it does not directly measure or compute the distortions. Rather, the channel estimator supplies the estimated phase differential to correct for or equalize the phase distortions over the channel. This construction for the term channel estimator confirms the Court’s construction for the term “amplitude” and “phase differential” of the signal as not being distortions or mere differences as a result of the channel effects.

For the above reasons, the Court construes the term “phase differential” to mean “*difference in phase resulting from differential modulation.*” The term “characteristic” is not used in the specification of the ‘222 patent. The Court finds that the term applies to both “amplitude” and “phase differential” in claim 1. Thus, the Court construes the term “amplitude and phase differential characteristics” to mean “*characteristics of both the amplitude and the difference in phase resulting from differential modulation of the received data signals.*” The Court construes the term “amplitude and phase differential” to mean “*amplitude and difference in phase resulting from differential modulation.*” The Court construes the term “an estimated amplitude and an estimated phase differential” to mean “*an estimated amplitude and an estimated difference in phase resulting from differential modulation.*”

### 3. “channel estimator”

Wi-LAN’s Proposed Construction	Defendants’ Proposed Construction
“a device for computing the amplitude and/or phase distortions of a received signal”  Alternative: “a device for computing amplitude and/or phase differences in the received signal caused by the wireless channel”	“a device for estimating one or both of the amplitude and the phase differential of the received signals to produce as output one or both of the difference in amplitude or phase between received data symbols”

The construction for this term is largely related to the construction for the terms relating to “amplitude and phase differential.” In light of the Court’s prior constructions, the only term to be construed is the “channel estimator” term itself. As previously stated, the claimed channel estimator estimates the phase differential of the transmitted signals by sampling the amplitude envelope of the signals. *See* ‘222 patent, 11:1-28. There may be distortions to the amplitude and phase of the transmitted signal caused by the channel. However, the Court finds that estimates of the “amplitude” and the “phase differential” are used to correct for distortions over the channel, not that the channel estimator itself directly computes or measures the distortions. *See* ‘222 patent, 9:43-61. Accordingly, the “phase differential” of the received signal is supplied to the “pre-distorter” to correct for “phase distortion over the channel.” *Id.* The Defendants’ construction largely recites most of the subsequent language following the term to be construed, and therefore the Court rejects Defendants’ construction as being unhelpful. Again, the Court rejects Wi-LAN’s proposal to equate the term differential to distortion. The Court finds that the language of the claims and specification are clear that the channel estimator may compute an estimated phase differential and estimated amplitude, but it is not necessarily a device for computing distortions. *See* ‘222 patent, 9:43–61. The channel estimator of the ‘222 patent first obtains an estimated amplitude of the received signal by sampling the amplitude envelope, which

is then used to obtain an estimated “phase differential” to correct for the channel’s effects on the received signal. ‘222 patent, 11:10–19. The specification provides that the channel estimator is for “estimating the channel.” *See* ‘222 patent, 10:67–11:1. Further, the plain language of the term “channel estimator” implies that it is a device that estimates the channel. Wi-LAN’s expert confirms that the goal of the channel estimator is to estimate the channel, and more particularly to estimate the effect of the channel on information symbols. Thus, the Court construes the term “channel estimator” to mean “*a device that estimates the effect of the channel on the transmitted signals.*”

#### **4. “a wideband frequency division multiplexer for multiplexing the information onto wideband frequency channels”**

Wi-LAN’s Proposed Construction	Defendants’ Proposed Construction
<u>Entire disputed phrase:</u> “a device for placing information onto a number of frequencies (K) having a frequency range between the frequencies ( $\Delta f$ ), both large enough to be able to achieve a specific throughput and large enough to be able to avoid using either a clock or a carrier recovery device without substantially affecting the BER”	<u>Entire disputed phrase:</u> “a multiplexer for multiplexing the information onto frequency channels with a K and a $\Delta f$ large enough to be able to achieve a specific throughput and large enough to be able to avoid using either a clock or a carrier recovery device without substantially affecting the BER”
<u>wideband frequency division multiplexer:</u> “a device for placing information onto wideband frequency channels”	<u>wideband frequency division multiplexer:</u> “a multiplexer for multiplexing the information onto [wideband] frequency channels”
<u>wideband frequency channels:</u> “a number of frequencies (K) having a frequency range between the frequencies ( $\Delta f$ ), both large enough to be able to achieve a specific throughput and large enough to be able to avoid using either a clock or a carrier recovery device without substantially affecting the bit error rate (BER)”	<u>wideband frequency channels:</u> “frequency channels with a K and a $\Delta f$ large enough to be able to achieve a specific throughput and large enough to be able to avoid using either a clock or a carrier recovery device without substantially affecting the BER”

The phrase to be construed is “a wideband frequency division multiplexer for

multiplexing the information onto wideband frequency channels.” “Wideband in this patent document is described in the context of Wideband-Orthogonal Frequency Domain Modulation (W-OFDM or wideband OFDM).” ‘222 patent, 5:24-26. The specification defines Wideband-OFDM as “OFDM with a K and a  $\Delta f$  large enough to be able to achieve a specific throughput and large enough to be able to avoid using either a clock or a carrier recovery device without substantially affecting the BER.” ‘222 patent, 6:30-34. The specification of the ‘222 patent repeatedly states that a “first frame of information is multiplexed over a number of wideband frequency bands at a first transceiver, and the information transmitted to a second transceiver. *See* ‘222 patent, Abstract; 2:54-57. The transceiver includes “a wideband frequency division multiplexer for multiplexing the information onto wideband frequency channels.” *See* ‘222 patent, Abstract; 3:25-28. “To implement wideband modulation, Orthogonal Frequency Division Multiplexing (OFDM) is preferred in which the information, for example encoded speech, is multiplexed over a number of contiguous frequency bands.” ‘222 patent, 7:12-15.

Wi-LAN argues that the term “frequency division multiplexer” means “a device for placing information onto a number of frequencies. Further, Wi-LAN argues that “frequency division multiplexing” is a method for transmitting information simultaneously in the frequency domain by placing information onto a number of frequencies. Thus, Wi-LAN contends that the term multiplexing means “placing.” The Court disagrees with Wi-LAN. However, the Defendants do not provide a helpful construction for the term and merely argue that it is “a multiplexer for multiplexing the information” onto wideband frequency channels. The Court finds that the terms “multiplexer” and “multiplexing” are well known in the art. The Court finds that the term “multiplexer” means a device that multiplexes, e.g., combines or merges two or

more signals or input channels into a single output signal or single output channel. Likewise, the Court finds that the term “multiplexing” means combining two or more signals into a single output signal. There is nothing in the specification or claim language that dictates straying away from these well known-meanings. The Court finds that one of ordinary skill in the art would understand, in general, frequency division multiplexing as a type of multiplexing where different frequencies are used to combine multiple streams of data for transmission, wherein each signal is assigned a different carrier frequency. The Court finds that one of ordinary skill in the art would understand, in general, orthogonal frequency-division multiplexing as a type of frequency division multiplexing where a number of sub-carriers are used to carry data, wherein the data is divided into several parallel data streams or channels, one for each sub-carrier. These meanings are consistent with the specification of the ‘222 patent. Wi-LAN’s proposed construction conflicts with the well-known meaning of the term multiplexer by redefining “multiplexing” as “placing.” The Court finds that “multiplexing” involves more than merely “placing information onto.” The Court notes that the term “multiplexing” is used in claim 7 and the parties do not attempt to define the word “multiplexing.” Thus, the Court construes the disputed term “wideband frequency division multiplexer” and not the undisputed “multiplexing” term. The Court construes the term “wideband frequency division multiplexer for multiplexing the information onto wideband frequency channels” to mean “*a device that combines the information from multiple inputs into a single output for multiplexing the information onto wideband frequency channels.*”

In regards to the term “wideband frequency channels,” the parties essentially adopt the same construction that is supported by the specification, *see ‘222 patent, 6:30-34*, with a few

notable differences. The Court finds that “wideband frequency channels” means “frequency channels with” certain characteristics, and that the Defendants’ proposed construction follows the specification more closely than Wi-LAN’s proposal. However, the Court agrees with Wi-LAN that K,  $\Delta f$ , and BER should be described with more than just symbols or acronyms. In the specification K is defined as a “number of points,”  $\Delta f$  is defined as “frequency band,” and BER is defined as “bit error probability” or “bit error rate.” ‘222 patent, 1:64-66; 5:26-29; 7:44-46. Thus, the Court construes the term “wideband frequency channels” to mean *“frequency channels with a K (number of points) and a Δf (frequency band) large enough to be able to achieve a specific throughput and large enough to be able to avoid using either a clock or a carrier recovery device without substantially affecting the BER (bit error rate).”*

## 5. “points”

Wi-LAN’s Proposed Construction	Defendants’ Proposed Construction
“frequencies”	“divisions within a frame corresponding to one information symbol each”

The relevant language in claim 7 of the ‘222 patent is as follows: “the frequency band is formed from a first set of K1 points and a pair of tail slots each having K2 points, each of the points being separated by a frequency range of  $\Delta f$ .” Claim 7 also states that “the frequency band” is that upon which information is multiplexed. The specification expressly defines that the entire available bandwidth B is divided into a number of points K, where adjacent points are separated by a frequency band,  $\Delta f$ . See ‘222 patent, 5:26-31; 17:17-22. The available bandwidth B is the product of a number of points K multiplied by a frequency band  $\Delta f$ , that is  $B=K\Delta f$ . *Id.* The K points are grouped into a frame of K1 points and two tail slots of K2 points each, so that  $K = K1 + K2$ . *Id.* Thus, based upon Figure 2 and the corresponding specification, it is clear that

the points are located within the bandwidth, that there can be K1 points or K2 points, and that K1 points are located in the frame and K2 points are located outside the frame but still in the available bandwidth. *See id.* and FIG. 2. The Court finds that “points” does not equate to merely “frequencies” as Wi-LAN suggests. However, the Court finds that points can exist in the frame and outside the frame in the tail slots, and thus disagrees with Defendants’ proposed construction that points means “divisions within a frame.” The specification also expressly states that “each point in the frame corresponds to one information symbol.” ‘222 patent, 5:35-36. However, because the Court finds that the “tail slots” of K2 points are outside of the frame of information, then those K2 points would not necessarily correspond to “an information symbol” based upon the specification. Thus, Defendants’ proposed construction including “corresponding to one information symbol each” is incorrect. The Court construes the term “points” to mean “*divisions within the frequency band.*”

#### **6. “tail slots”**

<b>Wi-LAN’s Proposed Construction</b>	<b>Defendants’ Proposed Construction</b>
“groups of frequencies that act as guard bands to reduce power outside of the frequency band”	“divisions within a frame that act as a guard band”

The construction of this term relates to the construction for the term “points.” Claim 7 of the ‘222 patent expressly states that “the frequency band is formed from ... a pair of tail slots each having K2 points.” The specification states that the “two tail slots act as guard bands to ensure that the out-of-band signal is below a certain power level.” ‘222 patent, 5:36-38. Both parties agree that the tail slots act as a guard band, but disagree as to the remainder of the proposed constructions. Based upon Figure 2 and the corresponding specification, it is clear that K1 points are located in the frame and K2 points, corresponding to the two tail slots, are located

outside the frame but still in the available bandwidth or frequency band. *See* ‘222 patent, 5:26-40, FIG. 2. Thus, the Court rejects Defendants’ proposed construction that tail slots are necessarily “divisions within a frame.” The Court does not find that Wi-LAN’s proposal to include the phrase “reduce power outside of the frequency band” is necessary or is entirely based upon the specification. Thus, the Court construes the term “tail slots” as “*divisions within the frequency band that act as guard bands.*”

**7. “Where T is the duration of one time domain sample, the information is multiplexed over a number M of levels, and K1 selected such that  $2\pi\chi/K1 < \pi/M$ ”**

Wi-LAN’s Proposed Construction	Defendants’ Proposed Construction
<p>“T is the duration of one time domain sample, the information is multiplexed over a <u>number of distinct phases</u>, and K1 selected such that <math>2\pi\chi/K1 &lt; \pi/M</math>”</p> <p>No construction necessary for “T is the duration of one time domain sample”</p> <p><u>number M of levels:</u> “a number of distinct phases”</p>	<p>“T is the duration of one time domain sample equal to <math>1/(K_1\Delta f)</math>, using <u>multilevel differential phase shift keying with M levels</u> to multiplex the information, where K1 is selected such that <math>2\pi\chi/K1 &lt; \pi/M</math>”</p> <p><u>number M of levels:</u> “multilevel differential phase shift keying with M levels”</p>

The specification states that when “ $\tau$  [clock error] is equal to  $\chi T$  where T is duration of one time domain sample and  $\chi$  is any real value, the shift [in phase difference] is equal to  $2\pi\Delta f\chi T$ .” ‘222 patent, 5:68-6:2. The parties agreed that the term “ $\chi$ ” means “a real value that when multiplied by the duration of one time domain sample provides the maximum expected clock error.” “Hence,  $\tau$  causes a shift in the phase difference between adjacent symbols of value  $2\pi\chi/K1$  since T is equal to  $1/(K1\Delta f)$ .” *Id.* at 6:2-4. Claim 7 expressly requires that K1 is selected such that  $2\pi\chi/K1 < \pi/M$ . The Court finds that the connection between “maximum expected clock error” and  $2\pi\chi/K1$  in claim 7 is based upon T being equal to  $1/(K1\Delta f)$ . The Court rejects Wi-LAN’s argument that no construction is necessary for this phrase. Thus, the

Court construes the term “T is the duration of one time domain sample” to mean “*T is the duration of one time domain sample equal to 1/(K1Δf)*.”

The term “M” is referenced twice in claim 7: “the information is multiplexed over a number M of levels” and “K1 selected such that  $2\pi\chi/K1 < \pi/M$ .” The specification provides that “M is the number of levels each symbol can take.” ‘222 patent, 5:44-46. The specification further provides that “let us assume that MDPSK is used in an OFDM system with the number M of levels.” *Id.* at 6:34-36. Still further, the specification provides that it is a “necessary condition for wideband OFDM” that K1 is selected so that  $2\pi\chi/K1 < \pi/M$ . *Id.* at 7:3-7. The Court finds that the specification expressly defines  $2\pi\chi/K1$  as the “phase difference between adjacent symbols.” The Court finds that this is a well-known reference to “phase differential” used in differential modulation and the phrase “ $2\pi\chi/K1$ ” as understood by the specification and claims would only be relevant in a system using differential modulation. The Court finds that the number of “levels” does not necessarily equal the number of “phases.” Thus, the Court rejects Wi-LAN’s proposed construction that equates “number M of levels” with merely “number of distinct phases.” While the specification provides an example that uses “a number M of levels” in the context of multilevel differential phase shift keying (MDPSK), such a use is only a preferred embodiment and is not a necessary limitation to the term. See ‘222 patent, 5:31–35, 6:34–46. One of ordinary skill in the art would understand that the “number of M levels” can apply to various types of differential modulation techniques, such as QAM or MDPSK. The Court construes the term “the information is multiplexed over a number M of levels” to mean “*the information is multiplexed over a number M of levels, where M is the number of levels each symbol can take using differential modulation*.”

### 8. “carrier [recovery]” and “clock recovery”

Wi-LAN’s Proposed Construction	Defendants’ Proposed Construction
<u>carrier [recovery]:</u> “synchronizing the local oscillator to the carrier frequency of the received signal”	<u>carrier [recovery]:</u> “recovery of the carrier signal”
<u>clock recovery:</u> “synchronizing the sampling clock to the timing of the received signal”	<u>clock recovery:</u> “recovery of the clock”

Claim 7 requires that “the width of the frequency band is chosen so that neither carrier nor clock recovery is required at the second transceiver.” The terms “carrier” and “clock recovery” are also used in the construction of the term “wideband frequency channels” in claim 1. Defendants argue that the claim language uses carrier and clock recovery generally and does not limit those terms to any particular known technique. Wi-LAN argues that the terms are limited to a particular technique that is implicitly defined in the context of the prior art receiver shown in FIG. 1b.

There are numerous references to clock and carrier recovery in the specification and not one instance restricts the types of clock or carrier recovery that should be avoided. *See* ‘222 patent, 2:19-24; 4:55-63; 6:30–33; 6:46-50; 12:45-50; 13:5-7; 13:17-19; Figure 1b. The specification provides only that the use, in general, of “clock recovery” and “carrier recovery” is not required by the present invention. It does not provide that certain specific techniques or methods of “clock recovery” or “carrier recovery” are not required. The Court finds that the terms should not be limited to a particular embodiment or method, particularly when the claims and specification do not support such a limited interpretation. Thus, the Court rejects Wi-LAN’s proposed constructions and finds that they are an attempt to improperly restrict those terms to only one of the many ways of performing the clock or carrier recovery that were well-known at

the time the application leading to the '222 patent was filed. The Court finds, however, that Defendants merely rephrase and rearrange the terms to be construed, and such a construction is not helpful in this instance.

One of skill in the art would understand the term "carrier recovery" to generally mean the process of extracting a phase-coherent reference carrier from a received carrier waveform or providing an estimate of the carrier phase from the received signal. One of skill in the art would understand the term "clock recovery" to generally mean the process of determining the clock of the received signal or recovering clocking information from the received data. Thus, both clock and carrier recovery derive the carrier phase and clock, respectively, from the information-bearing signal. The Court construes the term "carrier recovery" to mean "*process of determining the carrier phase of the received signal.*" The Court construes the term "clock recovery" to mean "*process of determining the clock of the received signal.*"

#### **9. "out of band signal"**

Dependent claim 9 provides that "K2 is selected so that the out of band signal is less than a given level." Subsequent to the parties' briefing and argument on this term, the parties have agreed by letter to the Court, dated April 7, 2010, that the term "out of band signal" means "power outside the frequency band." However, Defendants still argue that claim 9 is invalid for failing to meet 35 U.S.C. § 112. The Defendants do not argue that "out of band signal" is indefinite, but that the subsequent phrase "less than a given level" is indefinite. It appears that Defendants did not contend that "less than a given level" needed to be construed, or that the specific phrase was indefinite, until the Defendants' responsive claim construction brief. Thus,

Wi-LAN did not provide any proposed construction for the term and instead argued that the term “out of band signal” was not indefinite and had a particular meaning.

The Court finds that the phrase “less than a given level” is not indefinite. A claim is indefinite only if the “claim is insolubly ambiguous, and no narrowing construction can properly be adopted.” *Exxon*, 265 F.3d at 1375; *Honeywell*, 341 F.3d at 1338-39. This term is not “insolubly ambiguous” so as to prevent construction. *See Young*, 492 F.3d at 1346 (claims are considered indefinite when they are “not amenable to construction or are insolubly ambiguous”). The specification contains examples from which one of ordinary skill in the art could determine the scope of the claim. For example, the “two tail slots act as guard bands to ensure that the out-of-band signal is below a certain power level” and “to ensure that the out-of-band signal is ydB or less relative to the in-band signal...” ‘222 patent, 5:36-44; 6:46-48. The specification then provides an explicit example of what, in a particular instance, the “less than a given level” should be: “[t]he two tail slots of 195.3 KHz each (i.e. 8 points each) ensure that the signal outside the entire band of 100.39 MHz is below -50 dB.” ‘222 patent, 7:57-60. In addition, the specification teaches that “to allow use of the radio frequency spectrum...the system must satisfy federal regulations...[that] impose limits on the power and the frequency spread of the signals exchanged...” ‘222 patent, 1:50-54. The Court finds that there is sufficient guidance in the specification as to the meaning of “less than a given level” to one of ordinary skill in the art. *See Exxon*, 265 F.3d at 1375 (“If the meaning of the claim is discernible, even though the task may be formidable and the conclusion may be one over which reasonable persons will disagree, we have held the claim sufficiently clear to avoid invalidity on indefiniteness grounds.”) The Court rejects Defendants’ argument that because the “level” in the claim is unspecified, no meaningful

bound is placed on the patent claim. Consistent with the parties' agreement, the Court construes the term "out of band signal" to mean "*power outside the frequency band.*" The Court finds that the term "less than a given level" is not indefinite. The Court construes the term "less than a given level" to mean "*less than a given power level to satisfy federal regulations.*"

## **VI. TERMS IN DISPUTE OF THE '802 PATENT**

### **1. "transceiver"**

<b>Wi-LAN's Proposed Construction</b>	<b>Defendants' Proposed Construction</b>
"a two-way radio unit"	"link"

Wi-LAN's construction for the term "transceiver" in the '802 patent is the same as its construction for "transceiver" in the '222 patent, while Defendants propose a construction that is different from their construction for the '222 patent. The '802 patent references a "transceiver" only a few times in the specification. In one instance, the specification provides that "we allow a single link (i.e., a single transceiver) to use more than one code at the time same." '802 patent, 2:3-5. The Court rejects Defendants' argument that this reference unequivocally limits the term "transceiver" to a "link." Rather, the Court finds that this portion of the specification provides that a transceiver can be an example of a link. The Court finds that there is nothing in the specification or claims that would limit the term "transceiver" to anything other than its ordinary meaning to one of skill in the art. Thus, consistent with its construction for the term "transceiver" in the '222 patent, the Court construes the term "transceiver" as "*a device that transmits and receives data.*"

## 2. “invertible randomized spreading”

Wi-LAN’s Proposed Construction	Defendants’ Proposed Construction
<u>Invertible randomized spreading:</u> “spreading and applying complex constants chosen randomly, in a manner that is invertible”	<u>Invertible randomized spreading:</u> <b>Defendants’ proposal</b> “spreading using an invertible randomized transform”
<u>spreading:</u> “modulating data symbols by codes of larger bandwidth”	<b>LG Electronics’ proposal:</b> “spreading using an invertible randomizer transform”
<u>Alternative for spreading:</u> “modulating data symbols by codes having multiple chips”	<u>spreading:</u> “distributing information bits over code chips thereby reducing the effective bandwidth”

### A. Spreading

The independent claims of the ‘802 patent, in general, require operating on the plural sets of N data symbols to produce modulated data symbols corresponding to a *spreading or an invertible randomized spreading* of each set of N data symbols. The specification has numerous references to “spread” or “spreading.” “The invention deals with the field of multiple access communications using Spread Spectrum modulation.” ‘802 patent, 1:14-15. “Spread Spectrum can be classified as Direct Sequence, Frequency-Hopping or a combination of the two.” *Id.* at 1:18-19. “Commonly used spread spectrum techniques are Direct Sequence Spread Spectrum (DSSS) and Code Division Multiple Access (CDMA) . . .” *Id.* at 1:21-23. In the Background section, the specification provides that “DSSS is a communication scheme in which information bits are spread over code bits (generally called chips),” and then provides certain advantages of this “information spreading.” *Id.* at 1:25-45. “In this patent, we present Multi-Code Direct Sequence Spread Spectrum (MC-DSSS) which is a modulation scheme that assigns up to N DSSS codes to an individual transceiver where N is the number of chips per DSSS code.” *Id.* at

2:6-10; Abstract. In the Detailed Description section, the specification provides that the computing means “operates on the plural sets of N data symbols to produce modulated data symbols corresponding to an invertible randomized spreading of the stream of data symbols.” *Id.* at 4:2-5. The computing means “includes a source 16 of N direct sequence spread spectrum code symbols and a modulator 18 to modulate each ith data symbol from each set of N data symbols with the I code symbol from the N code symbol to generate N modulated data symbols, and thereby spread each I data symbol over a separate code symbol.” *Id.* at 4:7-13.

The Court finds that spreading is typically understood to one of ordinary skill in the art as enlarging a signal of a particular bandwidth via a code that results in a signal with a wider bandwidth. Various dictionary definitions illustrate that in spread spectrum systems information content is spread over a wider bandwidth than the content of the original information to create a spread signal that has greater bandwidth than the original signal. As part of its intrinsic record, the ‘802 patent cites an authoritative text, the Proakis reference, that explains that spread spectrum signals have an expanded bandwidth. ‘802 patent, 1:22-32. Prior art cited during the prosecution of the ‘802 patent states that “[i]t is well known that spread spectrum techniques utilize bandwidths many times wider than those required by the data in transit” and that the basic data to be transmitted “is spread over a wider bandwidth than that occupied by the data alone.” Further, inventor Fattouche wrote an article that confirmed that all spread spectrum techniques use a “pseudo-random sequence to spread the spectrum of the data signal to be transmitted . . . thereby widening the spectrum of the data signal.”

In light of the substantial evidence that one of ordinary skill in the art would view the term “spreading” to necessarily include widening the bandwidth of a signal, and when there is

nothing in the specification that clearly indicates that the term spreading should have a different meaning, the Court rejects Wi-LAN’s arguments that the term should be merely “modulating data symbols by codes of larger bandwidth.” While modulating and spreading may be related, the Court finds that spreading does not necessarily mean modulating. The specification and claims of the ‘802 patent do not equate those terms. For example, the specification provides that the computing means includes a modulator to modulate data symbols to generate N modulated data symbols, *thereby spreading* each I data symbol over a separate code symbol. ‘802 patent, 4:7-12. Contrary to Wi-LAN’s arguments, the specification does not say *thereby “modulating”* each data symbol over a separate code symbol. *See id.* The Court finds that the use of the term “spreading” in the specification and the claims does not change the well-known definition of spreading. Thus, the Court finds that there is no evidence in the specification that the applicants intended to provide “spreading” with a special meaning different from its ordinary meaning.

The specification provides that “DSSS is a communication scheme in which information bits are spread over code bits (generally called chips).” ’802 patent, 1:25-27. However, the claims require “data symbols,” consistent with Wi-LAN’s proposal, not “information bits” as proposed by the Defendants. The Court is not convinced that the definition of spreading should include the limitation of “thereby reducing the effective bandwidth” rather than the well-known understanding that spreading is used “to create a wider bandwidth.” The Court finds that the ordinary meaning of the term “spread” is to distribute over a greater area of space or time, to extend or distribute over a region, to scatter, to stretch or extend over a greater area. Thus, the Court construes the term “spreading” to mean “*distributing data symbols over codes to create a wider bandwidth of data symbols.*”

## B. Invertible Randomized Spreading

The independent claims, in general, require operating on the plural sets of N data symbols to produce modulated data symbols corresponding to a *spreading or an invertible randomized spreading* of each set of N data symbols. Thus, the “invertible randomized” term modifies “spreading.” In the Detailed Description section, the specification provides that the computing means “operates on the plural sets of N data symbols to produce modulated data symbols corresponding to an invertible randomized spreading of the stream of data symbols.” ‘802 patent, 4:2-5. The specification also provides that Figure 8 is a “schematic showing the Randomizer Transform (RT) where a(1) a(2) … a(N) are complex constants chosen randomly.” *Id.* at 3:12-14. Claim 19 provides that the “direct sequence spread spectrum codes are generated by operation of plural non-trivial transforms on a random sequence of input signals.” The prosecution history of the ‘802 patent is enlightening. In a Response to an Office Action, the applicants stated that the “key here is the randomization of the transformation.” August 28, 1995 Amendment and Response to Office Action, p. 15. “With randomized spreading, it is less likely that a pulse will be generated.” *Id.* at p. 16. The applicants provided the following response to another Office Action:

It is well known in the art that a randomizer transform … actually does not generate a perfectly randomized signal, which is impossible, but a near approximation to it, in other words a pseudo-random signal. In fact, it is believed to be well known in the art, and this is the meaning in each of the claims in this application for patent, … that when the term “randomizer,” “randomized,” or “randomizing” is used in relation to a spreading or transform of a signal, then it is a “pseudo-randomizer,” “pseudo-randomized,” or “pseudo-randomizing” spreading or transform that is being referred to. The fact that the transform is in each case invertible, means that the transform is known beforehand and a signal encoded by use of the transform can be decoded using the inverse transform.

February 12, 1996 Response to Office Action, pp. 1-2. The Court finds that, based upon the

specification, the claims, and the prosecution history, that one of ordinary skill in the art would find that proper codes perform an invertible randomized spreading of the information sequence or stream of data symbols. Further, the Court finds that, at least in the context of spread spectrum techniques, the randomized spreading of a signal is not a perfect randomization of the signal, but only a pseudo-randomization. Thus, “[a]ny one of the P N-point transforms in FIG. 3 consists of a reversible transform to the extent of the available arithmetic precision.” ‘802 patent, 4:29-32. The invertible randomized spreading of a signal is only invertible to the extent of the available arithmetic precision. *See id.* According to the claim language, the phrase “invertible randomized spreading” requires that the spreading be both “invertible” and “randomized.”

Neither of the parties’ proposed constructions is particularly helpful. Defendants’ proposals merely rearrange the words of the term to be construed and improperly limit the spreading to a particular type of transform where the claim language does not specifically require the use of a transform. On the other hand, Wi-LAN attempts to limit the definition of “randomized” to “applying complex constants chosen randomly” without clear support in the specification that the term should be so limited. The Court finds that the only reference to “complex constants” in the ‘802 patent is in the context of the Randomizer Transform shown in Figure 8 and that Wi-LAN’s proposed construction decouples the application of “complex constants chosen randomly” from the use of a transform in a specific instance and improperly applies the reference to the generic definition of “randomized.” The ordinary meaning of the terms “invert” or “invertible” means to turn upside down, to reverse in position or order, to turn or change to the opposite or contrary, or to turn inward or back upon itself. Based upon the

specification, the claims, and the prosecution history, one of ordinary skill in the art would find that the term “invertible” means “reversible.” The Court finds that the ordinary meaning of the term “randomize” is to order or select in a random manner or to make random. Based upon the specification, the claims, and the prosecution history, one of ordinary skill in the art would find that the term “randomized” means “pseudo-randomized.” Thus, the Court construes the term “invertible randomized spreading” to mean “*spreading that is reversible and pseudo-randomized.*”

### **3. “direct sequence spread spectrum codes”**

<b>Wi-LAN’s Proposed Construction</b>	<b>Defendants’ Proposed Construction</b>
“codes over which information bits are spread”	“pseudo random noise sequences over which information bits are spread”

The parties’ constructions are in agreement with respect to the phrase “over which information bits are spread.” Thus, the dispute turns on whether the term ”direct sequence spread spectrum codes” should be construed as “codes …” as Wi-LAN proposes or “pseudo random noise sequences …” as the Defendants propose.

The Court finds that the specification and the claims provide for various kinds of “codes.” Certain claims, such as independent claims 17, 23, and 33, require “more than one and up to M direct sequence spread spectrum codes.” On the other hand, claims 1, 4, and 12 just require “more than one and up to M codes.” Thus, some claims require the more limited “direct sequence spread codes” while others merely require the broader “codes.” The Court finds this difference in the claim language is controlling in this instance. Further, the Court finds that the applicant made the decision to claim these “different” codes in the claims during the reissue application. For example, during the prosecution of the reissue application, the applicants

amended the phrase “spreading of each *i*th data symbol over a separate code symbol” in claim 4 to the phrase “spreading of each data symbol over a separate code selected from a set of more than one and up to *M codes*, …” In contrast, during the prosecution of the reissue application, the applicants amended the phrase “invertible randomized spreading of each set of *N* data symbols over *N* code symbols” in claim 17 to the phrase “invertible randomized spreading of each set of *N* data symbols over more than one and up to *M direct sequence spread spectrum codes*.” *See also* reissue amendments in claim 12 as compared to claim 21. Thus, the Court finds that the applicants made a choice to claim “*M codes*” in some claims and to claim “*M direct sequence spread spectrum codes*” in other claims. The Court cannot ignore this different terminology in the claims.

The specification confirms this different use of terminology. The specification states that in a direct sequence spread spectrum (DSSS) system it is customary to use noise-like codes called pseudo random noise (PN) sequences. ‘802 patent, 1:27-30. In the descriptions of Figures 1 and 2 the spreading code is described as the “*i*th code.” ‘802 patent, 2:36-45. The specification states that the computing means shown in Figure 1 includes “a source 16 of *N* direct sequence spread spectrum code symbols.” ‘802 patent, 4:8-9. In the descriptions of Figures 13, 14, 17, and 18, the code is described as the “DSSS code.” ‘802 patent, 3:29-37; 3:47-54. Referencing Figures 13, 14, 17, and 18, the specification uses the term PN code in relation to the referenced DSSS codes. The specification also states that “[i]n this patent, we introduce new codes, which we refer to as ‘MC’ codes,” and then generally describes some advantages of using the “MC codes.” ‘802 patent, 2:15-33. Figure 3 “is a schematic showing of the *i*th MC code *c(i)*.” ‘802 patent, 2:54-55. The specification further states that Figure 3

“illustrates the code generator of the MC codes.” ‘802 patent, 2:29-34. Figures 4 and 5 describe an alternate transmitter and receiver “using MC codes generated in Figure 3.” ‘802 patent, 2:58-67. The specification further confirms that the transmitter and receiver illustrated in Figures 4 and 5 use the “MC codes” generated using the code generator in Figure 3. ‘802 patent, 4:35-46. Thus, the Court finds that the specification and the claims provide for various kinds of “codes.”

Defendants have provided ample evidence in the form of dictionary definitions, treatises, and expert opinion that the term “direct sequence spread spectrum code” had a well-known meaning at the time the application leading to the ‘802 patent was filed. The Court finds that one of ordinary skill in the art would consider that the codes used in a DSSS system would have noise-like properties or would be a pseudo-random code sequence. Further, as part of its intrinsic record the ‘802 patent cites an authoritative text, the Proakis reference, that explains that pseudo-random or pseudo-noise sequences are basic elements of spread spectrum systems. ‘802 patent, 1:22-32. Still further, inventor Fattouche wrote an article that confirmed that “[a]ll spread spectrum techniques use a repeating pseudo-random sequence to spread the spectrum of the data signal to be transmitted” and that the data signal is multiplied by a “pseudo-random code sequence.” In light of the substantial evidence that one of ordinary skill in the art would view the term “direct sequence spread spectrum code” to be a pseudo random code or noise sequence, and when there is nothing in the specification that clearly indicates that the term direct sequence spread spectrum code should have a different meaning, the Court rejects Wi-LAN’s arguments that “direct sequence spread spectrum codes” should not be pseudo-random. The Court finds that the specification’s use of the term “MC codes” does not change the well-known definition of DSSS codes, particularly when the specification and claims refer to different types of codes.

The specification provides that “DSSS is a communication scheme in which information bits are spread over code bits (generally called chips).” ’802 patent, 1:25-27. Both parties agree that the codes are those “over which information bits are spread.” Thus, the Court construes the term “direct sequence spread spectrum codes” as “*pseudo random codes over which information bits are spread.*”

#### 4. “converter for converting”

Wi-LAN’s Proposed Construction	Defendants’ Proposed Construction
<p><b>converter:</b> “a device that accepts data in one form or mode and changes it to another”</p> <p>Alternatively, should the Court construe this element pursuant to 35 U.S.C. § 112(6):</p> <p><b>Agreed Function:</b> “converting the first stream of data symbols into plural sets of N data symbols each”</p> <p><b>Structure:</b> i) element 10 in Fig. 1 including corresponding descriptions in the specification (col. 4:1-2 and 2:36-40); ii) element 10 in Fig. 4 including corresponding descriptions in the specification (col. 4:1-2 and 2:58-62); and equivalents thereof.</p>	<p>This element should be construed in accordance with 35 U.S.C. § 112(6).</p> <p><b>Agreed Function:</b> “converting the first stream of data symbols into plural sets of N data symbols each”</p> <p><b>Structure:</b> Fig. 1 (item 10), Fig. 4 (item 10), and col. 4:1-2</p>

The parties dispute whether the “converter” terms should be construed under 35 U.S.C. § 112 ¶ 6, and if so, further dispute the corresponding structure. The Court finds that, because the claim element “converter for converting...” does not use the word “means,” there is a rebuttable presumption that § 112, ¶ 6 does not apply. *MIT*, 462 F.3d at 1353-54. The Court finds that the Defendants have not met their burden to rebut the presumption. One of ordinary skill in the art would understand the term “converter” to recite sufficient structure and to have a reasonably well understood meaning. The term is not “simply a nonce word or a verbal construct that is not recognized as the name of structure.” See *Lighting World*, 382 F.3d at 1359-60. The

specification of the ‘802 patent describes the capabilities and uses of the converter. *See* ‘802 patent, 4:1-2; *see also* FIG. 1 (item 10). Wi-LAN has presented dictionary definitions for the term “converter” to mean “a device that accepts data in one form and converts it to another” and “a device capable of converter impulses from one mode to another, such as analog to digital, parallel to serial, or from one code to another.” Consistent with these dictionary definitions, the Court finds that a person of ordinary skill understands that a “converter” has a generally understood structural meaning that, in general, means a device that accepts data in one form or mode and changes it to another. The claims expressly require that the converter convert a stream of data symbols into plural sets of data symbols. Consistent with the claims, Figure 1 of the ‘802 patent shows that the converter is a serial-to-parallel converter. The Court notes that the Defendants have not provided an alternative construction, and have not argued against Wi-LAN’s proposed construction, if the term is not construed under § 112, ¶ 6. Thus, the Court construes the term “converter” to mean “*a device that accepts data symbols in one form or mode and changes the data symbols to another form or mode.*”

## 5. “first computing means”

Claim Language	Wi-LAN’s Proposed Construction	Defendants’ Proposed Construction
<p>1...<i>first computing means</i> for operating on the plural sets of N data symbols to produce modulated data symbols corresponding to an invertible randomized spreading of the first stream of data symbols; and</p>	<p><b>Agreed Function:</b> “operating on the plural sets of N data symbols to produce modulated data symbols corresponding to an invertible randomized spreading of the first stream of data symbols”</p> <p><b>Structure:</b> i) element 12 in FIG. 1 including corresponding descriptions in the specification (col. 2:6-10, 2:36-40, 4:2-12 and 4:35-38); ii) element 12 in FIG. 4 including corresponding descriptions in the specification (col. 2:6-10, 2:58-62, 4:39-44, and 4:66-5:12); iii) a computing device programmed to perform the algorithms disclosed by the foregoing; and equivalents thereof.</p>	<p><b>Agreed Function:</b> “operating on the plural sets of N data symbols to produce modulated data symbols corresponding to an invertible randomized spreading of the first stream of data symbols”</p> <p><b>Structure:</b> fig. 1 (item 12), fig. 4 (item 12), and cols. 2:6-10, 2:36-40, 2:58-62, 4:2-12, 4:35-44</p> <p><b>Alternate Structure:</b> LG Electronics cites additional structure: fig. 3 and cols. 2:54-57; 4:29-39; 4:66-5:7.</p> <p>LG Electronics contends that fig. 4 (item 12) and related description at cols. 2:58-62 and 4:39-44 cannot be supporting structure because fig. 4 does not show spreading.</p>
<p>17...<i>first computing means</i> for operating on the plural sets of N data symbols to produce sets of modulated data symbols corresponding to an invertible randomized spreading of each set of N data symbols over more than one and up to M direct sequence spread spectrum codes;</p>	<p><b>Agreed Function:</b> “operating on the plural sets of N data symbols to produce sets of modulated data symbols corresponding to an invertible randomized spreading of each set of N data symbols over more than one and up to M direct sequence spread spectrum codes”</p> <p><b>Same structure as above</b></p>	<p><b>Agreed Function:</b> “operating on the plural sets of N data symbols to produce sets of modulated data symbols corresponding to an invertible randomized spreading of each set of N data symbols over more than one and up to M direct sequence spread spectrum codes”</p> <p><b>Same structure as above</b></p>

<p>33... <i>first computing means</i> for operating on the plural sets of data symbols to produce modulated data symbols corresponding to an invertible randomized spreading of the first stream of data symbols over more than one and up to M direct sequence spread spectrum codes, where each direct sequence spread spectrum code has M chips;</p>	<p><b>Agreed Function:</b> “operating on the plural sets of data symbols to produce modulated data symbols corresponding to an invertible randomized spreading of the first stream of data symbols over more than one and up to M direct sequence spread spectrum codes, where each direct sequence spread spectrum code has M chips”</p> <p><b>Same structure as above</b></p>	<p><b>Agreed Function:</b> “operating on the plural sets of data symbols to produce modulated data symbols corresponding to an invertible randomized spreading of the first stream of data symbols over more than one and up to M direct sequence spread spectrum codes, where each direct sequence spread spectrum code has M chips”</p> <p>Invalid for failure to comply with 35 U.S.C. §112, if M does not equal N.</p> <p><b>Alternatively, same structure as above</b></p>
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#### A. Construction under 35 U.S.C. § 112 ¶ 6

The parties have agreed, and the Court concludes, that this term is a means-plus-function limitation. Next, the Court must construe the function of the means-plus-function limitation. *See Micro Chem.*, 194 F.3d at 1258. The parties have agreed to the claimed functions of the “first computing means” limitations of claims 1, 17, and 33. Thus, the Court adopts the parties’ agreed upon functions for the “first computing means” limitations in claims 1, 17, and 33. The Court must next construe the corresponding structure. *See Micro Chem.*, 194 F.3d at 1258.

The specification clearly identifies the first computing means (item 12) of Figure 1 to the claimed “invertible randomized spreading” function. *See ‘802 patent*, 4:2-12. All of the parties agree that the corresponding structure for the “first computing means” includes element 12 of Figure 1 and columns 2:6–10, 2:36–40, and 4:2–12. The parties dispute whether Figures 3 and 4 and their corresponding descriptions are corresponding structures for the “first computing means” limitation. The “structure disclosed in the specification is ‘corresponding’ structure only

if the specification or prosecution history clearly links or associates that structure to the function recited in the claim.” *See Medical Instrumentation*, 344 F.3d at 1210. The Court finds that one of skill in the art would not find that the patentee clearly linked or associated the structure recited in Figure 3 with the claimed function for the “first computing means” limitation. The Court finds that code generation is not part of the claimed function. Figure 3 is related to the code generator of the MC codes which is not referenced in Figure 1 or directly linked to the “first computing means 12.” *See ‘802 patent*, 4:2-12; 4:29-34; Figure 1. At best, the Court finds that the code generator of Figure 3 generates codes that may be used by the first computing means, not that it is a corresponding structure for the “first computing means” function. Further, columns 4:66-5:12 relate more to how the random codes are generated rather than the “first computing means” using the random codes. The specification clearly links only the computing means element 12 in Figures 1 and 4 to the claimed function, not the code generator in Figure 3. Thus, the Court rejects the contentions that Figure 3 and columns 2:54-57, 4:29-34, and 4:66-5:12 is corresponding structure for the claimed function. Regarding Figure 4, Defendant LG Electronics argues that Figure 4 is not corresponding structure because it does not produce invertible randomized spreading. The remaining Defendants and Wi-LAN argue that Figure 4 is corresponding structure because computing means is identified as item 12 in Figure 1 and Figure 4 has an item 12 that arguably corresponds to the computing means of Figure 1. The specification states that one can use the transmitter in Figure 1 with the MC codes generated using the code generator in Figure 3 to implement MC-DSSS using the MC codes. ‘802 patent, 4:35-38. The specification further states that “[a]n alternative transmitter to the one in Figure 1 using the MC codes in Figure 3 is shown in Figure 4.” ‘802 patent, 4:38-39. Certain dependent

claims and the specification provide that the transformer 20 is included in the means for computing element 12 of Figure 4, which operates on the set of data symbols to generate modulated data symbols as output corresponding to a spreading of the data symbols. *See* ‘802 patent, 4:35-44; claims 4, 20. Thus, the claims specifically contemplate structures from both Figures 1 and 4 as the corresponding structure for the claimed function. The Court finds that one of ordinary skill in the art would consider element 12 of Figure 4 and the corresponding description in the specification as corresponding structure to the “first computing means” limitation.

The Court rejects Defendant LG Electronics’ argument that the term is indefinite because the ‘802 patent fails to disclose the algorithm required for the “first computing means” to carry out the recited function. The Court finds that one of ordinary skill would find the specification to disclose the necessary algorithms based on the corresponding structure to perform the function for the “first computing means.” The Court also rejects Wi-LAN’s broad proposal to include as additional corresponding structure “a computing device programmed to perform the algorithms disclosed by the foregoing.” Wi-LAN provides no support in the specification for this additional statement. However, 35 U.S.C. § 112 ¶ 6 provides that the corresponding structure can include “equivalents thereof.” Thus, the Court finds that one of ordinary skill in the art would understand that the corresponding structure for the “first computing means” limitation in claims 1, 17, and 33 includes only “*element 12 of Figures 1 and 4, columns 2:6–10, 2:36–40, 2:58–62, 4:2–12, and 4:35–44, and equivalents thereof.*”

## B. Whether Claims 2, 4, 12, and 33 Are Invalid Under 35 U.S.C. § 112 ¶ 6

Defendants argue that independent claim 33 is invalid for failure to comply with 35 U.S.C. §112 ¶ 6. In particular, Defendants argue that the claims are invalid for claiming “M” chips per code when the only disclosed structure uses “N” chips per code. During reissue, applicants amended the functional language of the means-plus-function limitations, deleting references to “N” codes having “N” chips per code, and substituting a different limitation permitting a different number of codes and chips per code than the N data symbols in each set, claiming “up to M codes” having “M” chips per code. The applicants left the specification untouched, including the structures corresponding to the claimed functions. The Defendants argue that the specification is devoid of any structure corresponding to “M” chips per code, and thus unless M equals N, the claims are invalid. Defendants also argue that dependent claims 2, 4 and 12, discussed in further detail in subsequent sections of this order, are invalid for failure to comply with 35 U.S.C. §112 ¶ 6 for these same reasons.

The specification states that “[i]n this patent, we present Multi-Code Direct Sequence Spread Spectrum (MC-DSSS) which is a modulation scheme that assigns up to N codes to an individual transceiver where N is the number of chips per DSSS code.” ‘802 patent, Abstract, 2:6-10. In the specification, the number of data symbols, maximum number of codes, and the number of chips per code are all “N.” During prosecution of the reissue application, the inventors made the following representation to the examiner:

In the claims and detailed description of the original patent, N is the number of data symbols in each data set. In the detailed description and in the summary of the original patent, N is also used in reference to the number of chips per direct sequence spread spectrum code and the maximum number of code. Nevertheless, in the summary of the invention (see column 2, lines 206), it is clear that there are up to M codes (substituting M for N as stated in the summary), wherein M is the

number of chips per code.” Although M equals N in the detailed description (which is a possible embodiment of the invention), this is not necessary, as indicated at column 2, lines 2-6. M does not have to equal N. M is constrained by the number of chips per code, as illustrated in Figure 3. N, the number of data symbols per set of data symbols, is not constrained. Unfortunately, the lack of clarity from using ‘N’ in reference to both the number of data symbols and number of codes was erroneously perpetuated in a number of the claims, which this reissue application seeks to correct.

September 8, 1998, Combined Declaration and Power of Attorney for Reissue Patent Application, p. 2. The Court agrees with the representations made by the inventors and the arguments presented by Wi-LAN. The Court finds that M need not equal N, and conversely, the Court is not convinced that M cannot be a different number than N. While the specification provides an example where M is equal to N, resulting in N data symbols and N codes with N chips per code, the specification never states that the number of data symbols (N) must equal the number of codes or chips per code (M). Rather, the Court finds that the constraint in the specification is equating the number of codes to the number of chips per code. *See* ‘802 patent, Abstract, 2:6-10. The claims of the ‘802 patent specifically provide that the number of codes is more than one and up to M codes, where M is the number of chips per code. Thus, the Court finds that the claims apply the appropriate constraints of the specification. The Court finds that changing N to M for certain terms is not an impermissible broadening of the claims during reissue. Thus, the Court rejects Defendants’ arguments that claims 2, 4, 12, and 33 reciting the term “M” are invalid if M does not equal N.

## 6. “means to combine the modulated data symbols for transmission”

Wi-LAN’s Proposed Construction	Defendants’ Proposed Construction
<p><b>Agreed Function:</b> “combine the modulated data symbols for transmission”</p> <p><b>Structure:</b> i) element 14 in FIG. 1 including corresponding descriptions in the specification (col. 4:5-7 and 2:36-40); ii) element 14 in FIG. 4 including corresponding descriptions in the specification (col. 4:5-7 and 2:58-62); or iii) element 20 in FIG. 4 including corresponding descriptions in the specification (col. 4:39-44 and 4:66-5:12); and equivalents thereof</p>	<p><b>Agreed Function:</b> “to combine the modulated data symbols for transmission”</p> <p><b>Structure:</b> fig. 1 (item 14), fig. 4 (item 14), and col. 4:5-7</p> <p>LG Electronics contends that fig. 4 (item 14) cannot be supporting structure because fig. 4 does not show spreading</p>

The parties have agreed, and the Court concludes, that this term is a means-plus-function limitation. Next, the Court must construe the function of the means-plus-function limitation. *See Micro Chem.*, 194 F.3d at 1258. The parties have agreed to the claimed function of the “means to combine modulated data symbols for transmission” limitations of claims 1, 4, 17, and 33. Thus, the Court adopts the parties’ agreed upon functions for the “means to combine modulated data symbols for transmission” limitations. The Court must next construe the corresponding structure. *See Micro Chem.*, 194 F.3d at 1258.

The specification identifies the combiner (item 14) of Figure 1 for combining the modulated data symbols for transmission. *See ‘802 patent*, 4:2-12. All of the parties agree that the corresponding structure for the “means to combine” limitation includes element 14 of Figure 1 and columns 4:5-7. Similar to the “first computing means” term, the parties dispute whether Figure 4 and its corresponding description are corresponding structures for the limitation. Figure 4 is an alternative transmitter for Figure 1 that uses the generated MC codes. *See ‘802 patent*, 4:29-43. Element 14, the combiner, appears in both Figures 1 and 4. For the same reasons previously stated, the Court finds that the specification sufficiently links element 14 of Figure 4

as the corresponding structure for the “means to combine” limitation, and therefore rejects Defendant LG Electronics arguments to the contrary. Wi-LAN argues that the general descriptions of Figures 1 and 4, columns 2:36-40 and columns 2:58-62, are corresponding structures for the “means to combine” limitation. Wi-LAN further argues that element 24 of Figure 4 and its corresponding description, i.e., the transformer, is also corresponding structure. The “structure disclosed in the specification is ‘corresponding’ structure only if the specification or prosecution history clearly links or associates that structure to the function recited in the claim.” *See Medical Instrumentation*, 344 F.3d at 1210. The Court finds that one of skill in the art would not find that the patentee clearly linked or associated the general descriptions of Figures 1 and 4 with the agreed upon function for the “means to combine” limitation. Thus, the Court agrees with the Defendants and finds that the additional passages at column 2:36–40 and 2:58–62 are not corresponding structure for “means to combine” limitation because they concern the transmitters in Figure 1 and 4 as a whole and are neither clearly linked nor necessary to performing the claimed function at issue. Further, the Court finds that one of skill in the art would not find that the patentee clearly linked or associated element 20 of Figure 4 and its related description with the agreed upon function for the “means to combine” limitation. The Court finds that the “transformer” element 20 is separate and distinct from the combiner element 14. The specification provides that the transformer is for operating on or generating modulated data symbols, not for combining the modulated data symbols for transmission. ‘802 patent, 4:41–44. Further, the claims, in addition to the “means to combine” limitation, separately claim a “transformer” that is part of the “first computing means” and not the “means to combine.” Likewise, the passage at cols. 4:66–5:12 describes examples of transforms that may be used in

connection with Figure 3's code generator, not the transmitter's combining function. Thus, the Court rejects Wi-LAN's contentions that element 20 of Figure 4 and columns 2:36-40, 2:58-62, 4:39-44, and 4:66-5:12 is corresponding structure for the claimed function.

The Court finds that one of ordinary skill in the art would understand that the corresponding structure for the "means to combine the modulated data symbols for transmission" limitations in claims 1, 4, 17, and 33 includes only "*element 14 of Figures 1 and 4, column 4:5–7, and equivalents thereof.*"

## 7. "means for receiving"

Claim Language	Wi-LAN's Proposed Construction	Defendants' Proposed Construction
10... <i>means for receiving</i> a sequence of modulated data symbols, the modulated data symbols having been generated by invertible randomized spreading of a second stream of data symbols;	<p><b>Agreed Function:</b> "receiving a sequence of modulated data symbols, the modulated data symbols having been generated by invertible randomized spreading of a second stream of data symbols"</p> <p><b>Structure:</b> i) element 22 in FIG. 2 including corresponding descriptions in the specification (col. 2:41-43 and 4:18-21); ii) the corresponding element in Fig. 5 to element 22 (which includes the serial-to-parallel converter) including corresponding descriptions in the specification (2:63-64 and 4:18-21); iii) FIG. 20 including corresponding descriptions in the specification (3:58-60 and 6:20-35); and equivalents thereof.</p>	<p><b>Agreed Function:</b> "receiving a sequence of modulated data symbols, the modulated data symbols having been generated by invertible randomized spreading of a second stream of data symbols"</p> <p><b>Structure:</b> fig. 2 (item 22) and col. 4:18-21</p> <p>LG Electronics contends that fig. 2 (item 22) and related description at col. 4:18-21 do not disclose any structure.</p>

<p><b>17...means for receiving</b> a sequence of modulated data symbols, the modulated data symbols having been generated by an invertible randomized spreading of a second stream of data symbols over more than one and up to M direct sequence spread spectrum codes;</p>	<p><b>Agreed Function:</b> “receiving a sequence of modulated data symbols, the modulated data symbols having been generated by invertible randomized spreading of a second stream of data symbols over more than one and up to M direct sequence spread spectrum codes”</p> <p><b>Structure:</b> i) element 22 in FIG. 2 including corresponding descriptions in the specification (col. 2:41-43 and 4:18-21); ii) the corresponding element in Fig. 5 to element 22 (which includes the serial-to-parallel converter) including corresponding descriptions in the specification (2:63-64 and 4:18-21); iii) FIG. 20 including corresponding descriptions in the specification (3:58-60 and 6:20-35); and equivalents thereof.</p>	<p><b>Agreed Function:</b> “receiving a sequence of modulated data symbols, the modulated data symbols having been generated by invertible randomized spreading of a second stream of data symbols over more than one and up to M direct sequence spread spectrum codes”</p> <p><b>Structure:</b> fig. 2 (item 22) and col. 4:18-21</p> <p>LG Electronics contends that fig. 2 (item 22) and related description at col. 4:18-21 do not disclose any structure.</p>
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The parties have agreed, and the Court concludes, that this term is a means-plus-function limitation. Next, the Court must construe the function of the means-plus-function limitation. *See Micro Chem.*, 194 F.3d at 1258. The parties have agreed to the claimed function of the “means for receiving” limitations of claims 10, 17, and 34. Thus, the Court adopts the parties’ agreed upon functions for the “means for receiving” limitations. The Court must next construe the corresponding structure. *See Micro Chem.*, 194 F.3d at 1258.

The specification provides that “[a] sequence of modulated data symbols is received at 22 in which the sequence of modulated data symbols has been generated by the transmitter such as is shown in FIG. 1 or 4.” ‘802 patent, 4:18-21. The parties dispute whether element 22 of Figure 5 is corresponding structure for the limitation. Figure 5 is an alternative receiver for Figure 2 that uses the generated MC codes. *See* ‘802 patent, 4:29-46. Element 22, the point at

which the transmitted information is received, appears in both Figures 2 and 5. Although there are no numerical labels in FIG. 5, one of ordinary skill in the art would find that d'(k) in FIG. 2 corresponds to d'(k) in FIG. 5. The Court finds that the specification sufficiently links element 22 of Figures 2 and 5 as the corresponding structure for the “means for receiving” limitation, and therefore rejects Defendants’ arguments to the contrary. Wi-LAN argues that the general descriptions of Figures 2 and 5 and columns 2:41-43, 2:63-64 are corresponding structures for the “means for receiving” limitations. Wi-LAN further argues that Figure 24 and its corresponding description is also corresponding structure. The “structure disclosed in the specification is ‘corresponding’ structure only if the specification or prosecution history clearly links or associates that structure to the function recited in the claim.” *See Medical Instrumentation*, 344 F.3d at 1210. One of skill in the art would not find that the patentee clearly linked or associated the general descriptions of Figures 2 and 5 with the agreed upon function for the “means for receiving” limitation. Thus, the Court agrees with the Defendants and finds that the additional passages at columns 2:41–43 and 2:63–64 are not corresponding structure for “means for receiving” limitation because they concern the receivers in Figures 2 and 5 as a whole and are neither clearly linked nor necessary to performing the claimed function at issue. Further, one of skill in the art would not find that the patentee clearly linked or associated Figure 20 and its related description with the agreed upon function for the “means for receiving” limitation. The Court finds that Figure 20 relates to a passband modulation technique and is not relevant to the means for receiving element 22. *See* ‘802 patent, 3:58-60; 6:20-27. The Court also rejects Defendant LG Electronics’ argument that item 22 of Figure 2 and its related description fails to disclose any structure to one of ordinary skill in the art.

Thus, the Court finds that one of ordinary skill in the art would understand that the corresponding structure for the “means for receiving” limitations in claims 10, 17, and 34 includes only “*element 22 of Figures 2 and 5, column 4:18-21, and equivalents thereof.*”

#### **8. “second computing means”**

Wi-LAN’s Proposed Construction	Defendants’ Proposed Construction
<p><b>Agreed Function:</b> “operating on the sequence of modulated data symbols to produce an estimate of the second stream of data symbols”</p> <p><b>Structure:</b> i) element 24 in FIG. 2 including corresponding descriptions in the specification (2:41-54 and 4:13-28); ii) the elements of FIG. 5 between the serial-to-parallel and parallel-to-serial converters including corresponding descriptions in the specification (2:63-67 and 4:44-46); or iii) a computing device programmed to perform the algorithms disclosed in the foregoing; and equivalents thereof.</p>	<p><b>Agreed Function:</b> “operating on the sequence of modulated data symbols to produce an estimate of the second stream of data symbols”</p> <p><b>Structure:</b> fig. 2 (item 24) and cols. 2:41-54, 4:21-28</p>

The parties have agreed, and the Court concludes, that this term is a means-plus-function limitation. Next, the Court must construe the function of the means-plus-function limitation. *See Micro Chem.*, 194 F.3d at 1258. The parties have agreed to the claimed function of the “means for receiving” limitations of claims 10, 17, and 34. Thus, the Court adopts the parties’ agreed upon functions for the “second computing means” limitations. The Court must next construe the corresponding structure. *See Micro Chem.*, 194 F.3d at 1258.

The specification provides that “[a] second computing means 24 operates on the sequence of modulated data symbols to produce an estimate of the second string of data symbols. The computing means 24 shown in FIG. 2 includes a correlator 26 for correlating...” ‘802 patent, 4:21-28. The parties dispute whether the elements of Figure 5 between the converters is corresponding structure for the limitation. Figure 5 is an alternative receiver for Figure 2 that

uses the generated MC codes. *See* ‘802 patent, 4:29-46. Although there are no numerical labels in FIG. 5, the Court finds that one of ordinary skill in the art would find that the unnumbered elements between the serial-to-parallel converter and parallel-to-serial converter in Figure 5 corresponds to the second computing means 24 in Figure 2. Further, certain dependent claims provide that the second computing means comprises an inverse transformer for regenerating an estimate of the data symbols, which corresponds to Figure 5. *See* claims 13, 22, 37. Thus, the claims specifically contemplate structures from both Figures 2 and 5 as the corresponding structure for the claimed function. The Court finds that the specification sufficiently links these elements in Figures 2 and 5 as the corresponding structure for the “second computing means” limitation, and therefore rejects Defendants’ arguments to the contrary. Wi-LAN argues that the general descriptions of Figures 2 and 5, columns 2:41-54, 2:63-67, and 4:44-46 are corresponding structures for the “second computing means” limitations. Wi-LAN further argues that “a computing device programmed to perform the algorithms disclosed in the foregoing” is also corresponding structure. The “structure disclosed in the specification is ‘corresponding’ structure only if the specification or prosecution history clearly links or associates that structure to the function recited in the claim.” *See Medical Instrumentation*, 344 F.3d at 1210. The Court finds that one of skill in the art would find that the patentee clearly linked or associated the descriptions of Figures 2 and 5 with the agreed upon function for the “second computing means” limitation. Thus, the Court finds that the additional passages at columns 2:41-54 and 2:63-67 are corresponding structures for the “second computing means.” However, the Court agrees with the Defendants and finds that the additional passages at columns 4:13–20 and 4:44–46 are not corresponding structure for “second computing means” because they concern the receivers in

Figures 2 and 5 as a whole and are neither clearly linked nor necessary to performing the claimed function at issue.

The Court rejects Wi-LAN's broad proposal to include as additional corresponding structure "a computing device programmed to perform the algorithms disclosed by the foregoing." Wi-LAN provides no support in the specification for this additional statement. However, 35 U.S.C. § 112 ¶ 6 provides that the corresponding structure can include "equivalents thereof." Thus, the Court finds that one of ordinary skill in the art would understand that the corresponding structure for the "second computing means" limitations in claims 10, 17, and 34 includes only "*element 24 of Figure 2, the elements of FIG. 5 between the serial-to-parallel and parallel-to-serial converters, columns 2:41-54, 2:63-67, 4:21-28, and equivalents thereof*."

#### **9. "means to combine output from the second computing means"**

<b>Wi-LAN's Proposed Construction</b>	<b>Defendants' Proposed Construction</b>
<p><b>Agreed Function:</b> "combine output from the second computing means"</p> <p><b>Structure:</b> parallel to serial converters in FIGs. 2 and 5 including corresponding descriptions in the specification (2:41-54 and 2:63-67); and equivalents thereof.</p>	<p><b>Agreed Function:</b> "to combine output from the second computing means"</p> <p><b>Structure:</b> fig. 2 (parallel-to-serial converter)</p>

The parties have agreed, and the Court concludes, that this term is a means-plus-function limitation. Next, the Court must construe the function of the means-plus-function limitation. *See Micro Chem.*, 194 F.3d at 1258. The parties have agreed to the claimed function of the "means to combine output from the second computing means" limitation of claim 17. Thus, the Court adopts the parties' agreed upon functions for the "means to combine output from the second computing means" limitation. The Court must next construe the corresponding structure. *See Micro Chem.*, 194 F.3d at 1258.

The parties agree that the parallel to serial converter in Figure 2 is corresponding structure, but dispute whether the parallel to serial converter in Figure 5 and their corresponding descriptions is corresponding structure. The limitation expressly provides that it combines output from the second computing means, and is thus related to any structure that corresponds to the second computing means. For the reasons previously presented, the Court finds that the specification sufficiently links the parallel to serial converters in Figures 2 and 5 as the corresponding structure for the “means to combine output from the second computing means” limitation, and therefore rejects Defendants’ arguments to the contrary. Further, the Court finds that the additional passages at columns 2:41-54 and 2:63-67 are not corresponding structure for “means to combine output from the second computing means” because they concern the receivers in Figures 2 and 5 as a whole and are neither clearly linked nor necessary to performing the claimed function at issue. Thus, the Court finds that one of ordinary skill in the art would understand that the corresponding structure for the “means to combine output from the second computing means” limitation in claim 17 includes only *“the parallel to serial converters in Figure 2 and 5, and equivalents thereof.”*

#### **10. “combining the modulated data symbols for transmission”**

Subsequent to the parties’ briefing and argument on this term, the parties have agreed by letter to the Court, dated April 7, 2010, that no construction is necessary for this term. The Court adopts the parties’ agreement and finds that no construction is necessary for this term.

## 11. “modulator”

Wi-LAN’s Proposed Construction	Defendants’ Proposed Construction
“a device that varies one or more of the amplitude, frequency, or phase of each data symbol from each set of data symbols in accordance with a code from the up to M direct sequence spread spectrum codes”	invalid for failure to meet 35 U.S.C. § 112

Claim 2 requires a “modulator to modulate.” The specification provides that “[t]he computing means shown in FIG. 1 includes a source 16 of N direct sequence spread spectrum code symbols and a modulator 18 to modulate each ith data symbol from each set of N data symbols with the I code symbol from the N code symbol to generate N modulated data symbols, and thereby spread each I data symbol over a separate code symbol.” ‘802 patent, 4:7-12. While Wi-LAN proposes a construction for the term, the Defendants do not provide a proposed construction and rather argues that it is invalid. Defendants argue that the “modulator” term in claim 2 is indefinite and thus renders claim 2 invalid. Defendants argue that the structure corresponding to the computing means function in claim 1 requires that *each data symbol* in the set of N data symbols be spread over a separate code. By amending claim 2 to require spreading each set of data symbols over a separate code in the reissue application, Defendants argue that the applicants broadened claim 2 beyond the scope of independent claim 1, rendering it invalid.

The Court rejects Defendants’ arguments. The Court is not convinced that during reissue the applicants impermissibly broadened the claim language. Further, it is well settled law that claim terms are not necessarily limited to a preferred embodiment. The Court finds that the term “modulator” is not indefinite. A claim is indefinite only if the “claim is insolubly ambiguous, and no narrowing construction can properly be adopted.” *Exxon*, 265 F.3d at 1375; *Honeywell*, 341 F.3d at 1338-39. This term is not “insolubly ambiguous” so as to prevent construction. *See*

*Young*, 492 F.3d at 1346 (claims are considered indefinite when they are “not amenable to construction or are insolubly ambiguous”). The specification contains examples from which one of ordinary skill in the art could determine the scope of the claim. *See* ‘802 patent, 4:7-12; Figure 1 (item 18). The Court finds that there is sufficient guidance in the specification as to the meaning of “modulator” to one of ordinary skill in the art. *See Exxon*, 265 F.3d at 1375 (“If the meaning of the claim is discernible, even though the task may be formidable and the conclusion may be one over which reasonable persons will disagree, we have held the claim sufficiently clear to avoid invalidity on indefiniteness grounds.”) The Court finds that various dictionary definitions provide a consistent meaning for the term modulator as, generally, a device that modulates an electronic wave, e.g., a device that varies one or more properties of a carrier wave or signal, such as the amplitude, phase, or frequency of the wave. Wi-LAN’s proposal is partially consistent with the ordinary meaning of the term modulator, but adds language that is mostly superfluous based on the claim language following the term to be construed. The Court finds that in other claims the parties have not construed the terms modulate, modulating, or modulated, and thus the Court will not construe modulating, as opposed to modulator, in the claim at issue. The Court construes the term “modulator” to mean “*a device that varies one or more of the amplitude, frequency, or phase of each data symbol.*”

**12. “a source of more than one and up to M direct sequence spread spectrum codes, where M is the number of chips per direct sequence spread spectrum code;”**

<b>Wi-LAN’s Proposed Construction</b>	<b>Defendants’ Proposed Construction</b>
“a device that originates more than one and up to M direct sequence spread spectrum codes, where M is the number of chips per direct sequence spread spectrum code”	Invalid for failure to meet 35 U.S.C. § 112, if M does not equal N  “Alternatively, a source of more than one and up to M direct sequence spread spectrum codes, where M is the number of chips per direct sequence spread spectrum code, where M equals N”

Claim 2 requires a source of M direct sequence spread spectrum codes, where M is the number of chips per code. The specification provides that “[t]he computing means shown in FIG. 1 includes a source 16 of N direct sequence spread spectrum code symbols and a modulator 18 to modulate each ith data symbol from each set of N data symbols with the I code symbol from the N code symbol to generate N modulated data symbols, and thereby spread each I data symbol over a separate code symbol.” ‘802 patent, 4:7-12. Similar to the “first computing means” term of claim 33, Defendants argue that the “source” term in claim 2 is indefinite, and thus renders claim 2 invalid, if M does not equal N. Defendants argue that, like independent claim 33, dependent claim 2 is invalid because the specification does not provide structure corresponding to the “M” chips per code function. Similar to its previous findings as to the “first computing means” term of claim 33, the Court finds that changing N to M for certain terms is not an impermissible broadening of the claims during reissue. The Court finds that M need not equal N, and conversely, the Court is not convinced that M cannot be a different number than N. Thus, the Court rejects Defendants’ arguments that claims 2, 4, 12, and 33 reciting the term “M” is invalid if M does not equal N. The Court further rejects Defendants’ argument that this dependent claim is broader than claim 1 by eliminating the fixed numerical relationship between

the number of data symbols and chips per code. The Court finds that the ordinary meaning of the term “source” is any thing or place from which something comes, arises, or is obtained; the point of origin; or the point at which something springs into being or from which it derives or is obtained. Wi-LAN proposes a definition for the term “a source of” that is consistent with the ordinary meaning of that term, while Defendants do not provide a definition and only argue that M must equal N. The Court finds that while a source can be a device, it may not necessarily be limited to a device. Thus, the Court construes the term “source of” to mean “*place or device that originates.*”

### **13. “transformer”**

<b>Wi-LAN’s Proposed Construction</b>	<b>Defendants’ Proposed Construction</b>
“a device that performs an N-point transform on each set of N data symbols to generate modulated data symbols as output, the modulated data symbols corresponding to a spreading of each data symbol over a separate code selected from a set of more than one and up to M codes, where M is the number of chips per code”	Invalid for failure to meet 35 U.S.C. § 112, if M does not equal N  “Alternatively, a transformer for operating on each set of N data symbols to generate modulated data symbols as output, the modulated data symbols corresponding to a spreading of each data symbol over a separate code selected from a set of more than one and up to M codes, where M is the number of chips per code and where M equals N”

Claim 4 requires a transformer for operating, where M is the number of chips per code. The specification provides that “[t]he alternative transmitter shown in FIG. 4 includes a transformer 20 for operating on each set of N data symbols to generate N modulated data symbols as output. A series of transforms are shown.” ‘802 patent, 4:40-43. The specification also describes “[e]xamples of the N-point transforms.” ‘802 patent, 4:66. Similar to the “first computing means” term of claim 33, Defendants argue that the “transformer” term in claim 4 is indefinite, and thus renders claim 4 invalid, if M does not equal N. Defendants argue that, like

independent claim 33, dependent claim 4 is invalid because the specification does not provide structure corresponding to the “M” chips per code function. Similar to its previous findings, the Court finds that changing N to M for certain terms is not an impermissible broadening of the claims during reissue. The Court finds that M need not equal N, and conversely, the Court is not convinced that M cannot be a different number than N. Thus, the Court rejects Defendants’ arguments that claims 2, 4, 12, and 33 reciting the term “M” is invalid if M does not equal N. The Court further rejects Defendants’ argument that this dependent claim is broader than claim 1 by eliminating the fixed numerical relationship between the number of data symbols and chips per code. The Court finds that the ordinary meaning of the term “transform” is to change in form, appearance, or structure; a mathematical quantity obtained from a given quantity by an algebraic, geometric, or functional transformation. Wi-LAN proposes a definition for the term “transformer” that is consistent with the ordinary meaning of that term, while Defendants do not provide a definition and only argue that M must equal N. The Court finds that while a transformer can be a device that performs an N-point transform, it may not necessarily be limited to such a device. The parties have not disputed the meaning of other claims that use the terms “transformer” or “transforms.” Thus, the Court construes the term “transformer” to mean “*a device that performs transforms.*”

#### 14. “correlator”

Wi-LAN’s Proposed Construction	Defendants’ Proposed Construction
“a device that measures the degree of similarity between the received signal and each code from a set of more than one and up to M codes, where M is the number of chips per code”	Invalid for failure to meet 35 U.S.C. § 112, if M does not equal N  Alternatively, “a correlator for correlating each modulated data symbol from the received sequence of modulated data symbols with a code from a set of more than one and up to M codes, where M is the number of chips per code and where M equals N”

Claim 12 requires a correlator for correlating, where M is the number of chips per code.

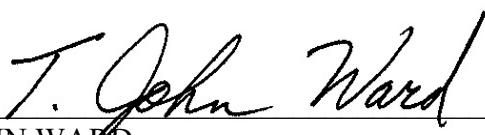
The specification provides that “[t]he dot product in FIG. 2 can be implemented as a correlator.” ‘802 patent, 4:15-16. The specification further states: “The computing means 24 shown in FIG. 2 includes a correlator 26 for correlating each I modulated data symbol from the received sequence of modulated data symbols with the I code symbol from the set of N code symbols and a detector 28 for detecting an estimate of the data symbols from output of the correlator 26.” ‘802 patent, 4:22-28. Similar to the “first computing means” term of claim 33, Defendants argue that the “correlator” term in claim 12 is indefinite, and thus renders claim 12 invalid, if M does not equal N. Defendants argue that, like independent claim 33, dependent claim 12 is invalid because the specification does not provide structure corresponding to the “M” chips per code function. Similar to its previous findings, the Court finds that changing N to M for certain terms is not an impermissible broadening of the claims during reissue. The Court finds that M need not equal N, and conversely, the Court is not convinced that M cannot be a different number than N. Thus, the Court rejects Defendants’ arguments that claims 2, 4, 12, and 33 reciting the term “M” is invalid if M does not equal N. The Court further rejects Defendants’ argument that this dependent claim is broader than claim 1 by eliminating the fixed numerical relationship between

the number of data symbols and chips per code. The Court finds that the ordinary meaning of the term “correlate” is to put or bring into mutual, complementary, parallel, or reciprocal relation; related by a correlation; having corresponding characteristics. Wi-LAN proposes a definition for the term “correlator” that is consistent with the ordinary meaning of that term, while Defendants do not provide a definition and only argue that M must equal N. The parties have not disputed the meaning of other claims that use the terms “correlator” or “correlating.” Claim 12 specifically requires a detector for detecting an estimate of the data symbols from output of the correlator, implying that the correlator correlates for the purpose of “detecting an estimate of the data symbols.” Thus, the Court construes the term “correlator” to mean “*a device that measures the degree of similarity between the modulated data symbols and a code.*”

## VII. CONCLUSION

The Court adopts the constructions set forth in this opinion for the disputed terms of the ‘222 and ‘802 patents. The parties are ordered that they may not refer, directly or indirectly, to each other’s claim construction positions in the presence of the jury. Likewise, the parties are ordered to refrain from mentioning any portion of this opinion, other than the actual definitions adopted by the Court, in the presence of the jury. Any reference to claim construction proceedings is limited to informing the jury of the definitions adopted by the Court.

SIGNED this 11th day of May, 2010.

  
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T. JOHN WARD  
UNITED STATES DISTRICT JUDGE